FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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Photo by Mr. Griffith Brewer.

LONDON FROM ABOVE.—The second of the series of photographs by Mr. Griffith Brewer. The central object of this photograph is St. Paul's Cathedral, the road leading up from the right-hand corner being Ludgate Hill, and the continuation Cannon Street. Newgate Street is the main street in the left-hand foreground, which continues after the bend into Cheapside. The three bridges over the Thames are Southwark Bridge, Cannon Street Railway Bridge, and London Bridge. The height at which this photograph was taken was about 2,100 ft.

A PLEA FOR THE SCHOOL AERO CLUB.

By ROBERT P. GRIMMER, Secretary of Arundel House School Aero Club, Surbiton.

ONE of the most common charges brought against us as a nation by the intelligent foreigner is that of an indifferent and lethargic attitude towards anything new. More especially has this applied to aviation, and the visitor from the Continent marvels at the lack of public interest in this country for such an epoch-making discovery as the science of flight. Aeronautics is destined eventually to revolutionise life on this planet, and while in the immediate future it will probably add to the general horror of war, it certainly will ultimately bring about an era of universal peace. For the present we can assume that aerial supremacy is fast taking the place of maritime supremacy, and that the British Empire is now far behind other countries in matters relating to aviation. The commercial aspect is of equal importance, and yet on this all-important subject of aviation the man-in-the-street is supremely indifferent.

Have we any remedy for this national indifference? Personally, I think we have one, potent, irresistible and infallible—the training in the principles of airmanship of our younger generation. This can only be effectively done through the medium of the school aero club. If only we can arouse the enthusiasm of our boys for aviation the future is secure; for in the course of a few years these boys will be citizens, and realising as they will the immense importance of the new science, they will surely change the whole trend of public opinion. The future of the Empire lies in the air, and knowing this the coming generation will see that aerial supremacy is maintained, both from a military and a commercial point of view. The school aero club has, up to the present, been almost ignored, but its work, carried out on correct lines, is of the utmost value to the nation at large.

At present, great and important discoveries in the new science of aviation may be made even by schoolboys. The kite provides lessons of considerable importance; itself a captive aeroplane, valuable data may be acquired in reference to atmospheric currents, wind pressures, &c. The ideal kite has yet to be evolved, and any improvement on the kite in general will surely react on the power-driven flyer. The construction of even a man-lifting kite is not beyond the capabilities of a clever schoolboy, but needless to say, experiments in that direction should be carried out with great caution. Nearly every problem of flight may be studied by the construction and flying of model aeroplanes, and it is more than probable that momentous discoveries will result from judicious experimenting with models. It is not beyond the bounds of possibility that a schoolboy might evolve the ideal plane or the perfect propeller, and even on stereotyped lines the average youth would acquire from his models a solid knowledge of the principles of aviation.

Kite and model aeroplane flying are splendid and useful sports, but what of gliding? This is indeed the real thing, and who can describe the sensations of actual flight? The white-winged machine poised at the top of the slope, the helpers holding her down in the teeth of the wind, the initial run down hill, the increasing lift, the feeling that one is at last veritably and actually riding the breeze, the glorious sense of control over elevator and rudder, and too soon, alas! the jarring contact with Mother Earth at the end of the flight. If our schoolboys only knew! The construction of a man-carrying glider is by no means an impossible feat for the members of a school aero club, if they possess some little enterprise and perseverance combined with a general knowledge of the principles of carpentry, and the cost need not exceed a few pounds. Obviously the lessons to be learned from the glider are of incalculable importance. The glider pilot of to-day is the aeroplane pilot of to-morrow, and surely the aeroplane pilot is at present a crying need? These are a few of the things that schoolboys can do for aviation if they have guidance and encouragement.

In October, 1908, the writer founded, at Arundel House School, Surbiton, what was actually the first school aero club, and also the first model aero club in Great Britain. His object was to show that such a club was a possibility, and that it could be successfully carried on if properly organised. There are people who assert that the enthusiasm of schoolboys cannot be maintained for a long period; the story of Arundel House School Aero Club would seem to point to the contrary. The members have never exceeded a score in number, and yet they have successfully constructed and flown man-lifting kites of large area, and have achieved actual flight with a full-sized glider. Both kites and glider were entirely designed by club members. They have made over a hundred model aeroplanes of every imaginable type; and flights of 1,000 ft. in length, and nearly a minute in duration, are frequently accomplished. They have given successful demonstrations at the Crystal Palace and elsewhere, and they have won over a dozen prizes in public competitions, frequently defeating even professional kite and model makers.

To touch briefly on our organisation, the general affairs of the Club are managed by a President and Committee elected annually. We are also fortunate in possessing some very generous patrons, who take a keen interest in our welfare. The annual subscription is 5*s*., and the senior and junior branches hold meetings on alternate Saturdays. We hold annually three championships, for "inventions," kites, and models respectively, and for these valuable prizes are given. The general public attend in great numbers, and the contests are regarded as important local events. There is a club library, including all the standard works on aeronautics, and it is open free of charge to all members. I cannot pass on without paying a tribute to the splendid work of our Committee, who have always been most loyal and unselfish in their whole-hearted devotion to the Club. Three of them, I may say, are shortly taking up the profession of aviation.

It has frequently been asserted that kite and model aeroplane flying is tame and devoid of interest. This is far from being the case, the work is distinctly full of incident, and one could really dispense with some of the element of adventure. I shall not readily forget a certain occasion when our kite-flying was brought to an abrupt conclusion by the advent of an irate game-keeper, who asserted with quite undue emphasis that the sight of the kites had struck terror into the hearts of his pheasants, who had actually (so he said) mistaken them for hawks! The first experiment we made with a large kite was certainly one that will linger long in our memories. The kite in question had an area of 80 sq. ft. and had obviously an immense pull. In our inexperience we were foolish enough to launch it in a gale, and to make sure that it would not fly away the maker securely fastened the rope round his waist. The result was that

he was dragged along the ground, and an involuntary crossing of a main road absolutely bristling with fast motor car traffic was only prevented by the opportune snapping of the cord. The kite eventually glided down among a herd of cattle, and its final rescue entailed a painful encounter with a farmer's dog, over which the writer, for personal reasons, will gladly draw a veil! The erratic flight of model aeroplanes is not always productive of good feeling on the part of passers-by, and some quite unnecessary language has occasionally been evoked from pedestrians who have had headgear removed by a swiftly-speeding machine. Our members have also assiduously cultivated the art of tree-climbing, for the average model displays an extraordinary propensity for resting bird-fashion on a slender bough. It is hard to persuade enthusiastic spectators that a position on a gliding hill is not consistent with personal safety, and we have more than once had to choose between suspending our experiments or risking a case of manslaughter. So much for this aspect of our experiences.

The work being at the same time useful and interesting, the reader may well ask why it has not been more generally taken up. The answer is easy. The authorities of our schools fear that the study of aviation would be detrimental to such sports as football and cricket, with the result that where they are not supremely indifferent they use all the influence at their command to suppress the youthful model-maker. The writer could quote cases where promising school aero clubs had been ruthlessly stamped out of existence by the authorities. It is for a paper like FLIGHT to arouse public opinion in this matter. Surely the model-maker should be encouraged rather than persecuted, but alas! how few in number are the school aero clubs of this country.

In conclusion, though justly proud of our reputation as pioneers in this particular branch of aeronautical work, we claim no special credit, and we shall feel more than recompensed for all our labours if the example we have tried to set inspires others to follow in our footsteps. There is a glorious heritage awaiting the youth of Britain —a heritage that man has sought for in vain for countless ages, a heritage priceless in value and inestimable in worth—and shall the youth of Britain be backward to take the prize? No, I prefer to think that they will not be wanting, and, through the medium of their school aero clubs, they can and will do much to advance that not distant day—

"When Earth's remotest denizens the whistling screw shall hear,
On bird and beast from west to east shall come the hush of fear,
O'er heat of tropic jungle far, o'er distant ice-clad seas,
'Spite heat and cold the pilot bold shall proudly ride the breeze;
O'er Earth's most mighty oceans wide, her peaks with clouds o'ercast,
Soon spreading wing shall tidings bring; the air is man's at last."

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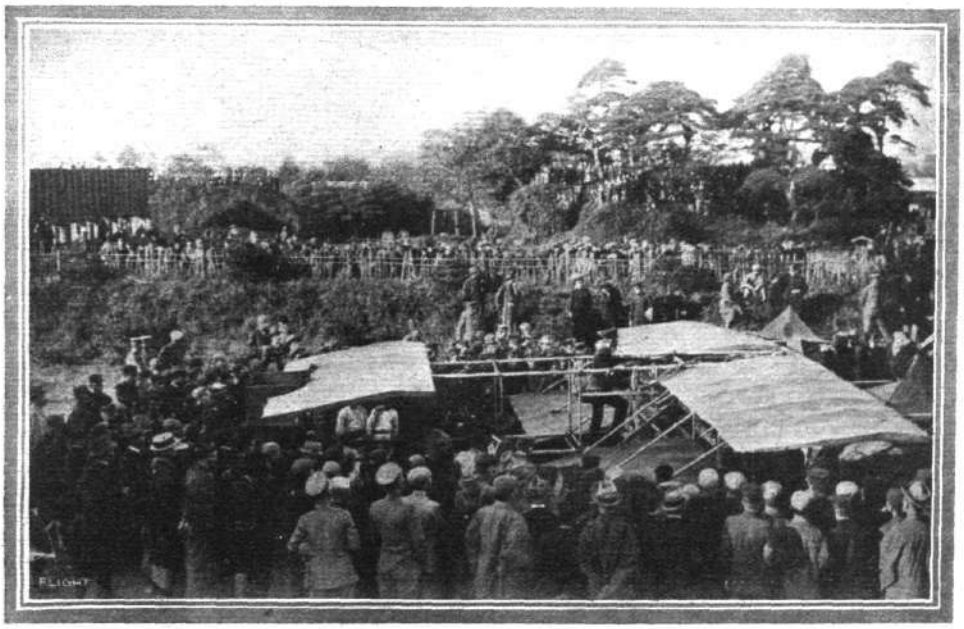
General Allen asks for Twenty Aeroplanes for U.S. Army.

IN his annual report for the year ending June 30th last, which has only recently been made public by the United States War Department, Brigadier-General James Allen recommends that at least twenty aeroplanes should be acquired for the United States Signal Corps as soon as possible. He contends that this estimate is extremely low, and that it would provide but two machines for each camp of instruction. A trained officer would be required at each machine, and in addition twenty officers would have to be trained as observers before the full military use of the aeroplane could be obtained.

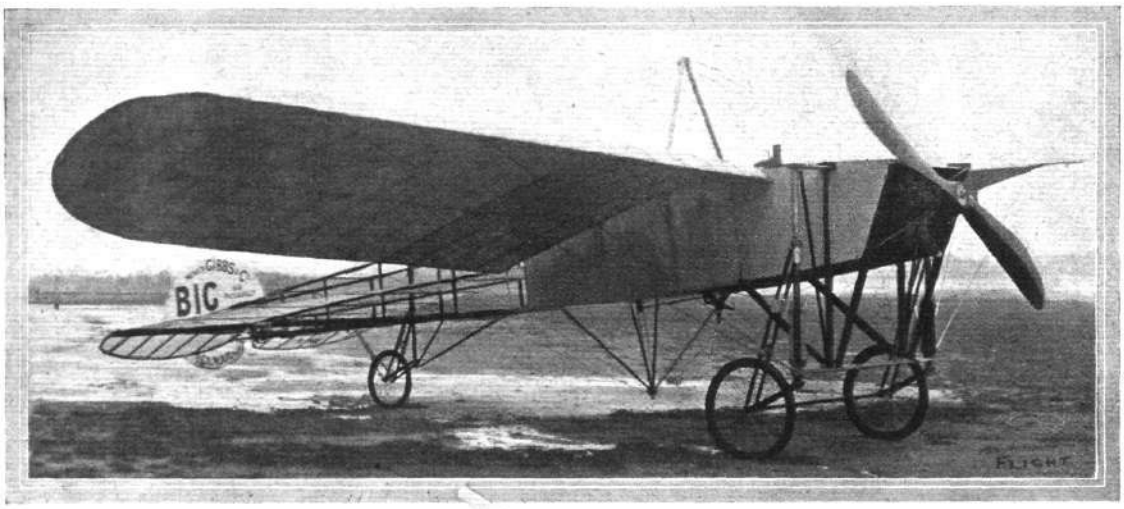


AEROPLANES IN JAPAN.—Captain Narohara and the aeroplane of his own construction in Japan, which is being tested with a view to its adoption for the Japanese forces. His brother officers, it will be noted, are interested members of the crowd.

THE BLÉRIOT TWO-SEATER MONOPLANE, TYPE XI, 2 BIS.

THERE are some names in aviation as in other spheres of life that carry with them, apart from the fame of recent successes, a certain glamour inseparable from intimate association with the making of history. *Blériot* is a name like that, for ever since one sunlit morning of July, 1908, when he made the first flight across the English Channel on a heavier-than-air machine his name has entered into the records of all time. His flight was the first to strike the public imagination. Others previously had made longer flights and perhaps more meritorious flights, and he himself had put up performances to his credit of a much more daring kind, but that one romantic crossing of a twenty mile strip of the sea outbalanced all other attainments in the eyes of the world. From that date he and the pilots trained by him, who fly the materialised products of his brain, have stepped from one success to another until now he stands amongst the half dozen who are now supreme in the realm of flight.

Four or five years have elapsed since M. Blériot first interested himself in a practical manner in the problem of human flight. Nor was his progress to ultimate success at first attended with unvaried good fortune. Accidents happened to his machine with unerring regularity up to within a month or two of his great flight. Often he changed his designs, but always did he remain a firm supporter of the monoplane principle, and now that he has evolved a successful passenger-carrying machine it is still of this type.



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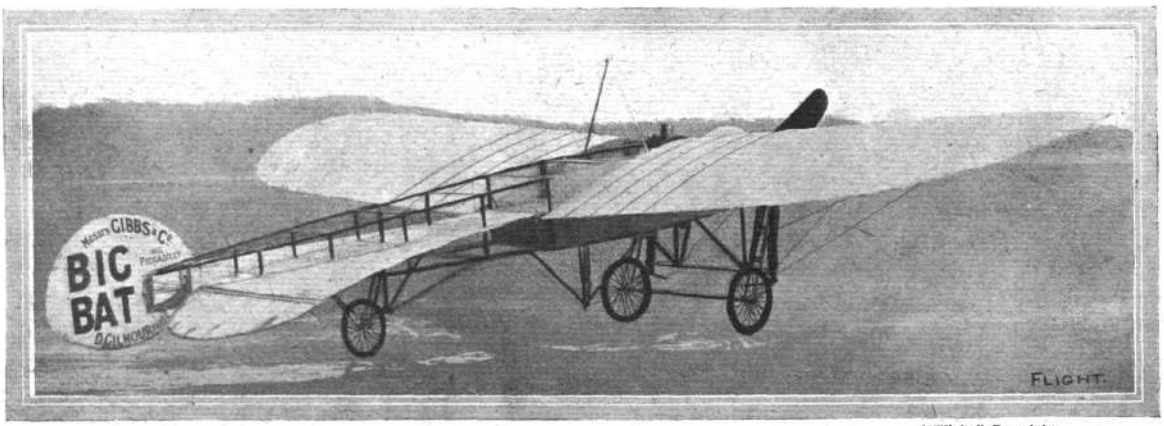
BLÉRIOT TWO-SEATER MONOPLANE.—View from the side.

It was at the historic Rheims meeting of 1909 that M. Blériot flew his first two-seater, but in this machine the seats were placed directly below the main planes, and behind the engine—an 8-cyl. E.N.V. The propeller was chain-driven, and geared down. This type was but a qualified success. It will be remembered that the first machine purchased by Mr. Grahame-White was one of this model, and was named by him the "White Eagle."



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BLÉRIOT TWO-SEATER MONOPLANE.—View showing the outrigger and tail portion of the machine.

In time for the Rheims meeting of this year, M. Blériot produced his latest two-seater, which was first seen in England at the Bournemouth meeting. In this model the passenger and pilot sit side by side on a seat similarly arranged to that on the single-seater; in fact, the only essential differences from the smaller model are the wider body and the pigeon-shaped tail.

THE DE FOREST CROSS-CHANNEL PRIZE.

The Disappearance of Mr. Grace.

THE one absorbing topic among those interested in aviation and flying matters during the past week has been the mysterious disappearance of Mr. Cecil Grace, and although we are still hoping against hope that he may yet be found, the worst fears have to be

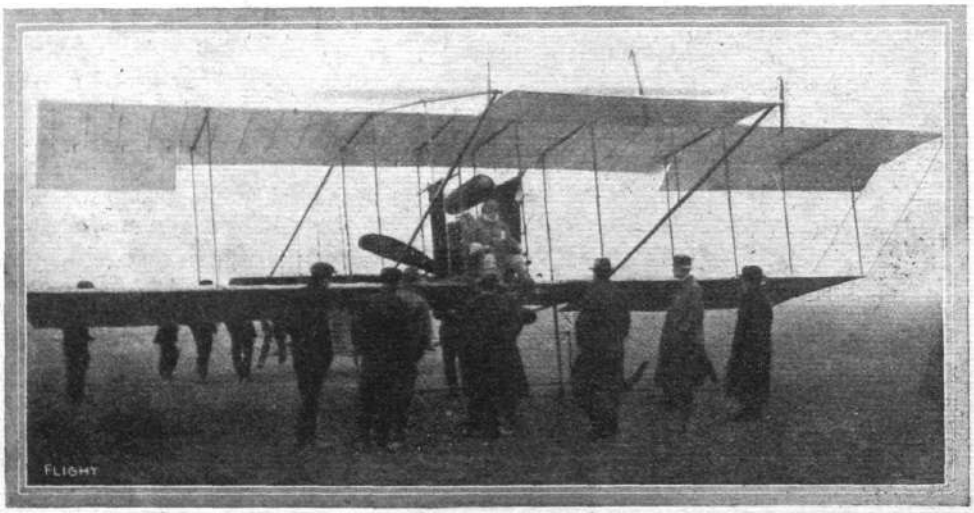
Mr. Cecil Grace's unfortunate Channel flight.—Mr. Grace just before the start, clothed in his three woollen jerseys, canvas overalls, and fur lined boots.

entertained, as it is patent to all who have experience of such matters that so long without news of any sort is terribly ominous of the worst. It is now a matter of history of how in his attempt to beat Mr. Sopwith's record for the Baron de Forest's prize Mr. Cecil Grace left Dover about 9 o'clock on the morning of December 22nd and flew over to France, where after making a wide circle over the country he landed at Las Baraques, near Calais. Mr. Grace decided to come down, as the conditions and the wind militated against any chance of doing better than Mr. Sopwith. By half-past two, taking advantage of a lift in the haze, Mr. Grace determined to fly back to Dover in order to be ready for a fresh attempt on the prize. He had previously arranged with the captain of the mail boat "Pas de Calais" to start from France some time after the boat left and follow its course by the smoke. The mail boat, however, was some ten minutes late in leaving Calais and Mr. Grace passed out to sea before she left, there to encounter a bad sea fog by which he appears to have been entirely engulfed. Since then nothing has been heard of Mr. Grace except that it was reported from the North Goodwins Lightship that an aeroplane had passed over the vessel, while a coastguard at Ramsgate declared that he heard the noise of an aeroplane's engine at a point which he estimated to be six miles off the shore. The skipper of a Ramsgate fishing smack also reported having seen a biplane when fishing to the south-west of the East Goodwins Lightship.

On Friday, the 23rd, on the urgent representations of the Royal Aero Club, the Admiralty officials at Sheerness and Chatham readily did everything that they could to assist in a most strenuous search for Mr. Grace. On Sunday morning the Aero Club officials were startled to receive a cable message from Lima, Ohio, to the following effect:—"Grace landed with machine in crevice under high cliff, exact location unknown." To this a reply was sent asking for further details, when the following message was received:—"Dropped on shore, not water. Could not rise above cliff. Request British east coastline people to search water's edge minutely." Under the distressing circumstances, even so curious a chance as this was not passed by. In fact, after an emergency meeting with the brothers of Mr. Grace, steps were taken by the Royal Aero Club to communicate with the coastguard and naval officers, and a thorough examination of the entire coastline was made, but without any trace of the missing aviator or his aeroplane being found. The Aero Club officials have, indeed, not spared themselves throughout the whole holidays in organising search parties, and in doing everything humanly possible to assist in the unfortunately fruitless search for Mr. Grace. There still remains the last glimmer of a hope that he may have been picked up by some slow sailing vessel or a fishing boat, to be heard of possibly in a day or two, and it is to this faint comfort only that the lost aviator's friends and co-workers must cling for a while longer.

Other Competitors.

ACTING on the advice of his doctor, Mr. Grahame-White has decided to withdraw from the competition, and has taken the opportunity to wish "bon voyage and a safe return" to the other competitors. Up to the time of going to press no further attempts have been made. Mr. Robert Loraine has been waiting at Dover and Mr. Greswell at Sheppey for a calm day, while Lieut. Watkins has been busy repairing his machine at Shorncliffe, and Mr. Cody has been making his preparations at Aldershot.



Mr. Cecil Grace ready in the pilot's seat prior to his start for the De Forest Cross-Channel Prize.

THE BRITISH MICHELIN CUP.

Mr. S. F. Cody Scores 115 Miles.

A VERY fine effort was made by Mr. Cody on the 22nd inst. at Aldershot to win the British Michelin Cup for this year. For 2 hrs. and 50 mins. he steered his large biplane round a marked course over Laffan's Plain, being officially observed on behalf of the Royal Aero Club by Lieut. Fox, R.E. Although Mr. Cody did not beat Mr. Sopwith's duration record of 3 hrs. 12 mins., it is claimed that he covered a greater distance, about 115 miles. A 20-mile wind was blowing, and at the end of the Plain, opposite to that on which the hangar is erected, the wind was particularly gusty and uncertain, with a result that the turn there had to be made very carefully. On one side lay a clump of trees and on the other a flag-post, whilst between these were some iron railings. Time after time the machine escaped the trees by about eight feet, and frequently it was hurled to within six feet from the ground from a height of 30 to 35 ft. This really splendid flight was brought to an equally sensational climax. After being 2 hrs. 50 mins. in the air, the machine was hurled down to the ground with a crash, from a height of well over 35 ft. In spite of this the machine was found to be quite undamaged, and Mr. Cody none the worse for what was probably the finest bit of airmanship he has ever displayed. The biplane was fitted with a Green engine, which ran perfectly throughout the trip.

Mr. Alec Ogilvie Does 140 Miles.

JUST as we go to press, we learn that on Wednesday afternoon Mr. Alec Ogilvie, on his British-built Wright biplane, fitted with one of the new type N.E.C. engines described in our last issue, succeeded in completing nearly 56 laps of a 2½-mile course over the Camber Sands. The flight of 139¾ miles, which occupied 3 hrs. 55 mins., was observed on behalf of the Royal Aero Club by Mr. Joseph Cundell, and by it Mr. Ogilvie secures the leading place in the competition for the British Michelin Cup. Mr. Ogilvie was only compelled to land by a leak in his water tank.

AIRSHIP AND BALLOON NEWS.

"City of Cardiff" Out Again.

HAVING completed the repairs to his dirigible, Mr. Willows went for a short trip on the afternoon of the 23rd inst. Leaving the Clement-Bayard shed at Lamotte-Breuil, he cruised about the country for half an hour at the end of which he landed in order to pick up Mrs. Willows and take her for a short trip.

A Long Trip by the "Ville de Bruxelles."

ON the 22nd inst. the dirigible "Ville de Bruxelles" was taken out of its shed at Etterbeek, with four passengers on board, and sailed over to Namur, after which it returned to the Belgian capital. Before landing at Etterbeek the dirigible cruised over the Royal Palace. During the four hours the airship was aloft a distance of about 160 kiloms. was covered. The gas envelope has now been deflated, and will be overhauled and reinflated next April.

"M III" Lands on a Roof.

LEAVING Tegel on the 22nd inst., the German military airship "M III" sailed with eight passengers on board over Frankfort-on-Oder and Wellmitz; then, following the course of the Meuse, she passed over Guben, Lieberose and Lubben, where a turn was made for home. Progress was very slow owing to the strong breeze, and it was therefore decided to make a halt at Rangsdorf, so that some of the passengers might land. During the evening the airship arrived at Spandau, and an attempt was made to anchor the balloon there in view of the gathering storm. Guided by the new lights on the airship garage, several attempts to carry out the landing were made, but without success, the airship finally landing on the roof of a house, where it was deflated and packed up for return to Tegel.

The Derelict "America" Sighted.

ACCORDING to a cable from New York, the British steamer "Horos" reports having seen the derelict Wellman airship 200 miles east of the coast of the Bahama Islands shortly before sundown on December 9th. It was floating on the top of the water, and the sailors at first took it to be a whale, but on cautiously approaching the object found it was a gas envelope. On learning this, Mr. Vaniman, the engineer of the expedition, said, although he had anticipated that when the airship was abandoned it would sink to the bottom of the Atlantic, and this would probably not occur if the ballonets remained inflated, he would like to get hold of the remnants for exhibition purposes, and has offered a reward of £200 for their recovery.

Mr. S. F. Cody and Lieut. A. E. Fox, R.E., the official observer on behalf of the Royal Aero Club of Mr. Cody's fine flight for the British Michelin Cup last week. Mr. Cody's biplane is in the background.

BRITISH NOTES OF THE WEEK.

New Army Aeroplanes.

ON Thursday last a short flight was accomplished over Farnborough Common on a machine embodying the ideas of the Sommer and also the Farman type of biplane. The maker, an employee of the Government Balloon Factory, made a flight of a few minutes, which was unhappily brought to a termination by the machine crashing to the ground head first. It was badly smashed, but the airman escaped without any serious injury.

Special Allowances for Naval Airmen.

FOLLOWING on a recommendation by the Admiralty, an Order in Council has been issued signifying the King's approval of the following daily allowances for officers and men employed in naval aircraft:—

	s.	d.		s.	d.
Officers, each	6	0	Leading seaman ratings	2	6
Chief petty officers ...	2	6	Able seaman ratings ...	2	0
Petty officers	2	6			

Madame Frank Convalescent.

IT is gratifying to be able to record that Madame Frank is gradually but surely recovering from the effects of her accident on the Boldon racecourse last Augus', although unfortunately she still has to make use of crutches. On the 20th inst. she was able to visit some friends in Newcastle, returning afterwards to Sunderland infirmary, where she has been since her accident.

Flight in South Africa.

CONSIDERABLE interest is being taken in various parts of South Africa in the latest developments in connection with aerial navigation, although the actual amount of flying done there up to the present has not been very great, owing to the fact that there are so few flyers actually at work. A number of lectures have been given in various towns on the subject, and at one given at Pretoria, on October 20th, General Sir Robert Colleton was in the chair, among those present being Lady Colleton and Lady Methuen. The lecturer was Major A. M. Rogers, R.E., who had been assisted in the preparation of his lecture by Mr. A. G. Heinze, who has been engaged in experimenting for some ten years past.

British Aeroplane Fabrics.

ON his return from America, Mr. Claude Grahame-White wrote a letter to the North British Rubber Co., to inform them of the satisfaction experienced by him in connection with their fabric, which he informs them he used in the majority of his duration flights in the United States. He was highly satisfied with the lightness and weather-resisting qualities of the material, and intends to use it on the new machines which he has designed and which will shortly be constructed.

The Valkyrie Machines.

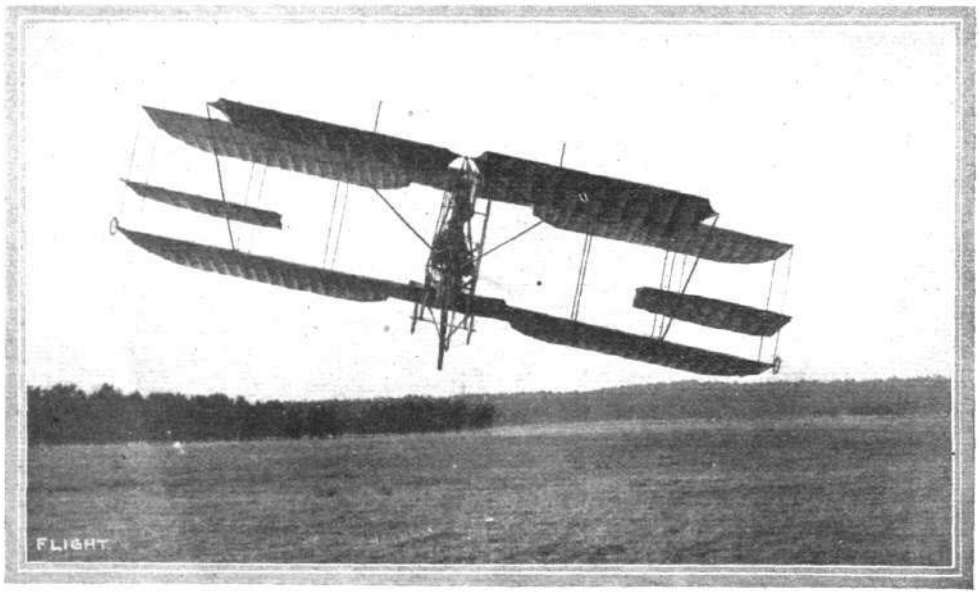
A VERY interesting price list has just been issued by the Aeronautical Syndicate dealing with their Valkyrie machines. In addition to giving photographs and full particulars of the complete machines, the booklet also contains a good deal of other useful information as well as a complete list of prices of the various component parts of the Valkyrie machines. A copy will be sent to any of our readers, on application to the Secretary, at Collindale Avenue, Hendon.

Bristol Biplanes and Gnome Engines.

APART from the fact that the new catalogue just issued by the British and Colonial Aeroplane Co., Ltd., gives full particulars of the Bristol biplanes and Gnome engines it is very interesting from the fact that it contains a number of splendid photographic illustrations of the Bristol machines in flight, both at Bristol and also at Salisbury Plain. A separate list has also been issued dealing fully with the Gnome engines, for which this firm are now the agents in Great Britain, and either of these useful books can be obtained by any of our readers mentioning FLIGHT who apply to the offices at Clare Street House, Bristol.

British-Built Propellers.

FOR some time Mr. Blackburn, of Leeds, has been giving his attention to the construction of propellers for aerial work, and has made a speciality of constructing built-up wooden propellers ranging from 5 ft. up to 12 ft. in diameter. We understand from Mr. Blackburn that each propeller is designed to suit the conditions under which it is required to work. A very interesting catalogue is issued by Mr. Blackburn, and a copy will be sent to any of our readers who apply for it.



MR. S. F. CODY'S FINE FLIGHT FOR THE BRITISH MICHELIN CUP.—Taking a corner of the course at a fine angle.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

Coventry Aeroplane Building Society (22, KINGSTON ROAD).

A GENERAL meeting will be held in the "Mayor's Parlour" Restaurant, Broadgate, on Friday, January 6th, at 8 p.m. All members and others interested are requested to attend. The secretary, Mr. J. W. Schofield, will give a "brief outline of the elementary principles of flight," with glider experiments; a discussion will follow, and it is hoped that several members will take part.

East London Aero Club (37, TUNMARSH LANE, PLAISTOW, E.).

A GENERAL meeting of the above club will be held to-night, Saturday, in the clubroom, the Alexandra Hotel, Stratford, E., at 7.30. After the official business has been discussed and the notices read out, the officials and committee for the ensuing year will be elected. If time permits, an interesting paper will be read. Prospective members and gentlemen interested are cordially invited to attend.

Kite and Model Aeroplane Assoc. (27, VICTORY RD., WIMBLEDON)

AN open competition has been organised for the best storm kite and method of establishing communication between ship and shore. 1st prize, medal and framed diploma; 2nd prize, medal; 3rd prize, medal.

The rules state that all entries must be made to the hon. sec. before January 11th.

All competitors must send their kites and tackle, carriage paid, to the address which will be sent on receipt of entry form.

Each competitor must send in with entry a detailed description of his method, and the kites and method will be tried by the judges during the spring gales, and they will report on each entry.

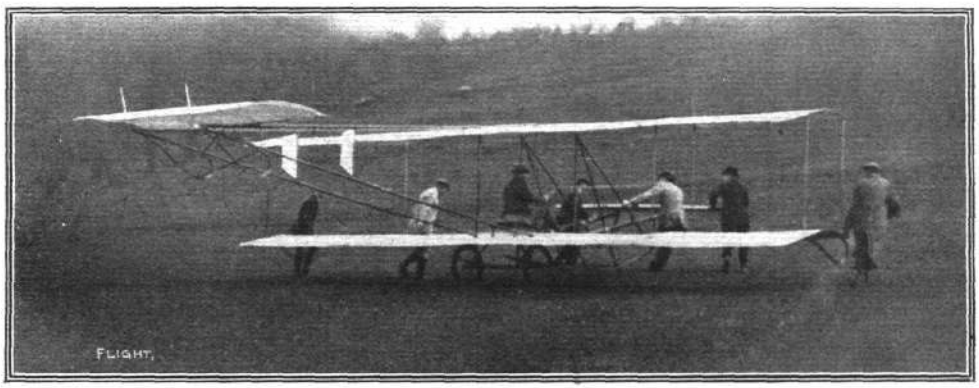
The kite which is declared the winner will be submitted to the Board of Trade by the Association, with the view of getting same adopted.

On Monday, January 9th, 1911, at 8 o'clock, at 53, Victoria Street, S.W., Mr. V. E. Johnson, M.A., F.R.M.S., will deliver a lecture on "The Gyroscopic Control of Aeroplanes," illustrated by numerous lantern slides and novel experiments with gyroscopes and models.

Scottish Aeronautical Society (185, HOPE STREET, GLASGOW).

COLONEL JOHN A. SILLARS, one of the vice-presidents of the Scottish Aeronautical Society, delivered a lecture before the members of the Society on Wednesday, the 21st, taking for his subject "The Modern Aeroplane and its Application to War."

The lecture was illustrated by limelight, and the Colonel treated his subject in a masterly manner and spoke on the expense and work being carried out by the various European Governments, and the large attendance present highly appreciated the lecturer's efforts in placing before them aeronautics from a military point of view.



The Glider of the Bristol and West of England Aero Club in practice on the Club's gliding hill.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

ON Thursday, 22nd inst., Mr. England brought out the new E.N.V. Weiss, and soon attained a height of some 40 ft., flying the length of the ground. This novel machine does not appear to turn readily, as the pilot found. It heeled over to such an angle that it culminated in a smash, Mr. England claiming acquaintance with the sewage farm, the machine losing its chassis and damaging its propeller. The aviator looked unhappy, but was fortunately unhurt. The Bristol biplane, piloted by a pupil, ran into a mound, also damaging its chassis.

M. Ducrocq was flying during the day, circling the aerodrome on his Henry Farman and taking up some passengers. Mr. Pixton on the Avroplane could not keep up long owing to a flagging engine. Some fine cross-country flying was put in during the morning by Mr. Morrison. At a good altitude he flew over Weybridge, and during the afternoon visited Woking. On each occasion he shut off his engine and planed to earth in very good form.

A pupil of Lane's, while rolling on the Lane-Blériot, had an accident. One of the engine cylinder-heads blew off.

Mrs. Bird at the tiller was coached by M. Blondeau on their Farman, flying low, rising only to about 15 ft.

Mr. Wickham was up for several circuits on Mr. Gibbs' Sommer, Mr. Bell was out rolling on Mr. Roe's triplane, Mr. Valentine on the Star, as also Mr. Macfie.

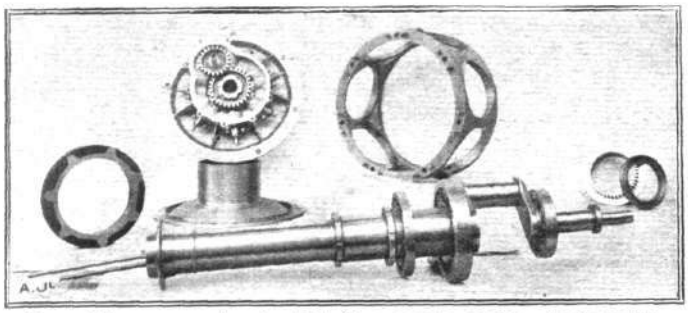
"Neale VI" monoplane, piloted by Mr. Fisher and Mr. Raynham, made short flights.

Christmas holidays and the Baron de Forest prize as counter-attractions leave no more serious work to report from Brooklands, although Mr. Sopwith is intending to have another try for the Michelin Cup.

The London Aerodrome.

A GOOD deal of flying was seen on the Friday before Christmas, when three of the Valkyrie machines were given trial trips. Four passengers were taken for flights of varying duration, and one of them, Major Dinnock, R.G.A., has now commenced a course of instruction at the school. The pilot instructor finished the day by rising to a height of 250 ft., at which altitude he circled round the aerodrome four times and then went out over the country towards Hendon village. Returning, he planed down and landed in front of the shed. Another large Valkyrie machine has just been sold, while work has been commenced on one of the racing type models.

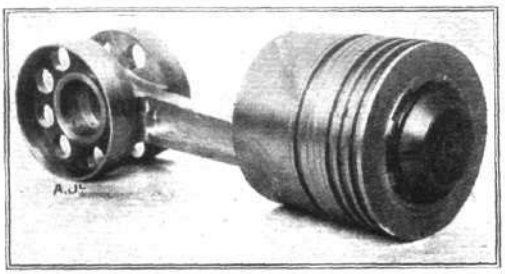
On Wednesday Mr. Barber was out on the Valkyrie two-seater, and flew for 35 mins. at a height of between 40 and 50 ft. Three of the pupils at the Blériot school made the necessary tests to obtain their pilot's certificates, the successful flyers being Mr. Bouwens, Mr. St. Croix Johnstone, and Capt. Hynes, R.G.A.



Some of the component parts of the Gnome rotary engine. In the centre is the stationary crank-shaft, and above it is the steel ring forming the crank-chamber. On the left is the end-plate of the crank-chamber carrying the valve-operating mechanism, and on the extreme left is the ignition-commutator.

which operation also disconnects the gudgeon-pin bracket from the piston.

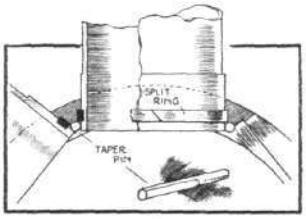
The seven pistons operate upon one crank, and six of the seven connecting-rods are hinged to the big-end of one particular connecting rod that actually embraces the crank. This big-end is mounted on a ball bearing, and ball bearings are also used to support the



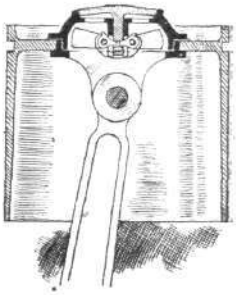
View of a piston with the master connecting-rod of the Gnome rotary engine. All the other connecting-rods are hinged to the big-end of this one.

engine as a whole upon the stationary crank-shaft. The cylinders are machined from the solid, and are held in place on a steel ring forming the outer part of the crank-chamber. The method of fastening is ingenious and very simple, and is accomplished without the use of bolts. The lower ends of the cylinders are turned with a groove to receive a split ring, similar to a piston ring in its general appearance. The cylinders are then forced through the holes that receive them in the crank-chamber and the split ring is sprung into the groove from the inside, after which the cylinders are drawn back again as far as the ring will permit. A taper pin of special section is driven through the periphery of the crank-chamber in such a way as to engage underneath the split ring so as to lock the cylinder in position. The crank-chamber is closed in front and behind by steel plates, one of which carries the cam mechanism for operating the exhaust-valves, which are situated in the cylinder-heads. Small counterweights are also employed in connection with the exhaust-valve mechanism in order to eliminate the effect of centrifugal force.

The carburettor is mounted at one end of the stationary crank-shaft, and the mixture is drawn in through a valve in the piston as already explained. Ignition is effected by a magneto, the magneto being mounted on a stationary bracket and driven by gearing. The distribution of the current to the sparking-plugs is effected by a revolving commutator-plate and a stationary brush. Bare brass wires are employed as connections between the plugs and the commutator. Castor oil is used for lubricating the engine, the oil being injected into the hollow crank-shaft through sight-feed fittings by a mechanically-operated pump.



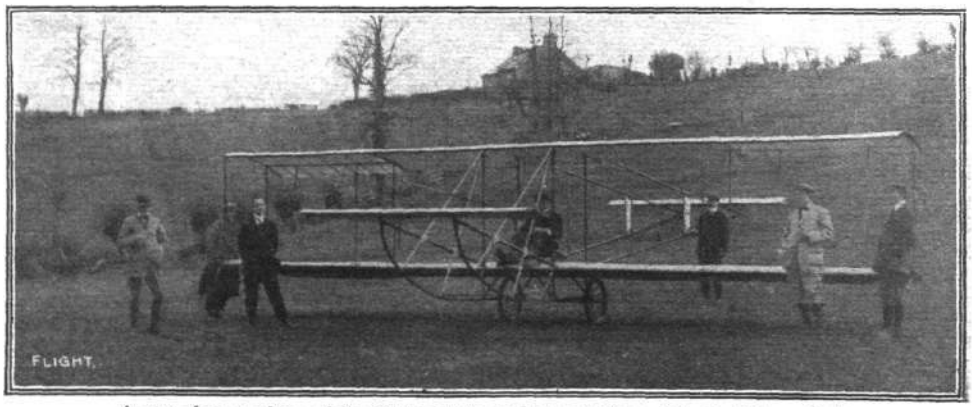
Sketch illustrating how the steel cylinders are held on the steel crank-chamber of the Gnome rotary engine by split-rings and taper-pins.



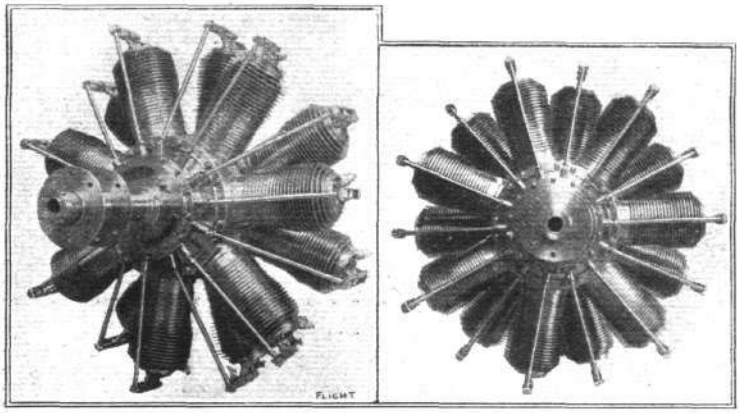
Sketch illustrating the balanced induction-valve in the piston-head of the Gnome rotary engine.

The bore and stroke of the Gnome rotary engine are 110 by 120 mm., and the normal revolutions 1,200. The 50-h.p. 7-cylinder model has a stated weight of 167 lbs., while the 100-h.p. 14-cylinder engine, which in principle consists of two 50 h.p. motors coupled together, but with the valve-mechanism all transferred to one end the stated weight is 220 lbs.

It should be noted that the sole British agents for the Gnome are the British and Colonial Aeroplane Co., Ltd., of Bristol.



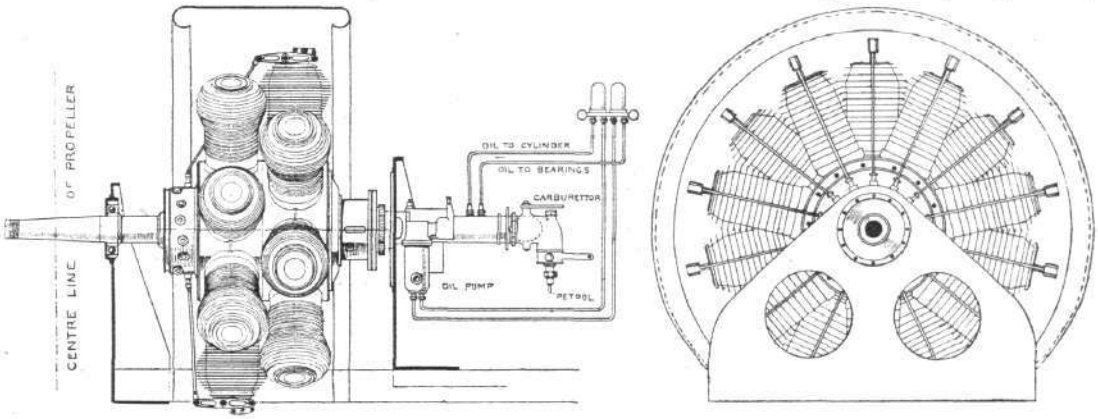
A view from in front of the Glider of the Bristol and West of England Aero Club.



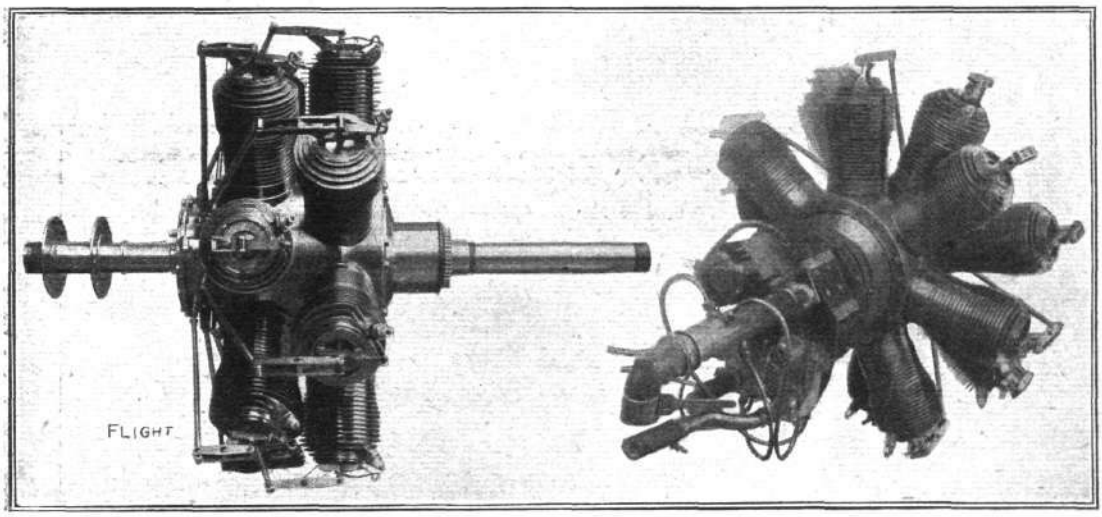
Another general view of the 100-h.p. 14 cyl. Gnome rotary engine, showing the valve mechanism controlling the exhaust; also an end view showing the symmetrical arrangement of the cylinders, which are placed nearly 26 degrees apart.

engine air-cooling is effective, and the lubrication is, at any rate, equally efficient in all cylinders.

Rotary engines have, of course, problems of their own, and one of the most important is the balancing of any small parts employed in the functioning of the engine. Thus, for example, the valves and the valve-operating mechanism have to be suitably balanced. In the Gnome engine the inlet-valves are situated in the piston-heads, for the mixture is drawn into the crank-chamber from the carburettor through the hollow crank-shaft, in order to avoid external pipes and the duplication of valve mechanism in the cylinder-heads. Recently, however, as our readers know, the manufacturers have developed a modification of their original design on these lines, with which experiments are still proceeding. The inlet-valve in the pistons is a neat and compact valve of the mushroom type, balanced against centrifugal force by small counter-weights, and normally held on its seat by a flat steel spring. The entire valve and its cage can be very readily removed,



Side and end elevations of the 100-h.p. 14-cyl. Gnome rotary engine.



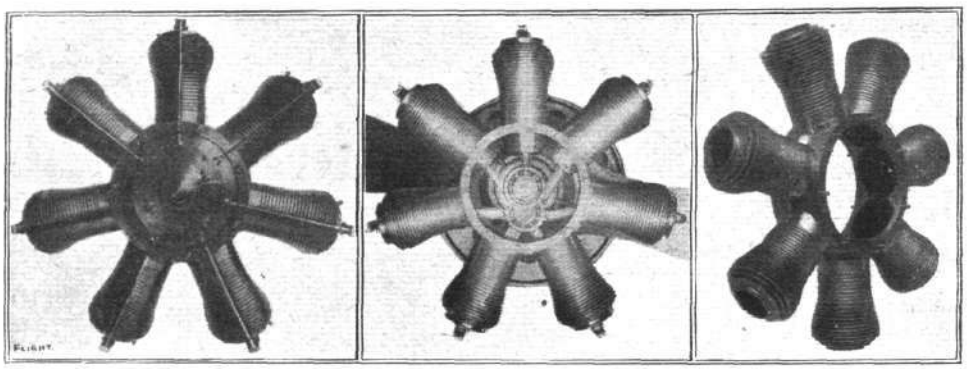
Side and general view of the 100-h.p. 14-cyl. Gnome rotary engine, showing the disposition of the two magnetos.

THE GNOME ROTARY MOTORS.

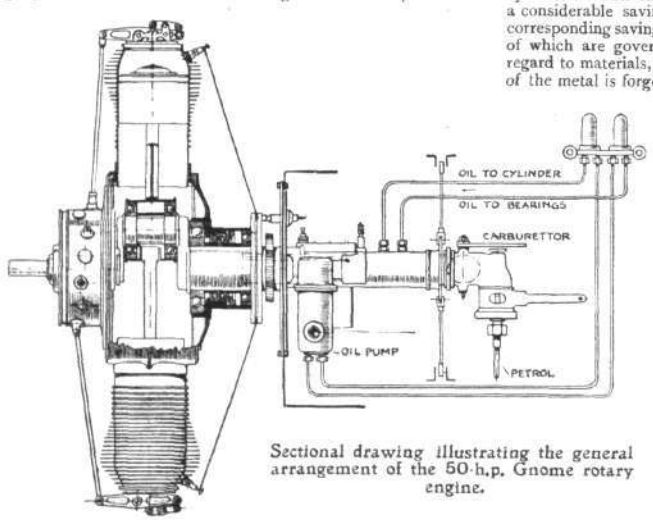
THE accompanying illustrations afford an interesting study of the constructional detail involved in the manufacture of the Gnome rotary motors, which have been achieving such remarkable success in connection with flight. More points of view than one justify the use of the term remarkable in this connection, for in the first place when the Gnome engine was introduced it was generally considered a moot point as to whether it would work satisfactorily at all, and when in practice it not only worked satisfactorily but was at one time practically the only motor capable of developing the necessary power within the necessary limits of weight, it succeeded in furthering the progress of aviation in a manner that was perhaps more effective than anything else possibly could have been at that time. From the beginning, aviators have wanted a light engine, and for a long time they wanted in vain; the advent of the Gnome very materially altered the general outlook, and although possessed of its own shortcomings as are most pieces of machinery, however relatively perfect, nevertheless it played its part well and there must always stand to its credit the fact that it has won many of the big prizes, and above all carried Paulhan on his great flight from London to Manchester.

Rotary engines are, it is true, generally associated with the idea of light construction and it is rather an interesting point that is often overlooked in connection with the application of this idea to flight motors, that the reason why rotary engines are popularly supposed to be lighter than others is because they form their own fly-wheel, yet on aeroplanes, engines are seldom fitted with a fly-wheel at all. As a matter of fact the Gnome engine is not so much light because it is a rotary motor, as it is a rotary motor because the design that has been adopted as that most conducive to lightness is also most suited to an engine working in this way. There are two prime factors governing the lightness of an engine, one being the initial design, and the other the quality of the materials employed. The consideration of reducing weight by cutting away metal is a subsidiary method that ought not to play a part in standard practice, however useful it may be in special cases. In the Gnome rotary engine the lightness is entirely due to the initial design and to the materials employed in manufacture. Thus, in the first case, the engine is a radial engine, and has its seven cylinders spaced equally around a crank-chamber that is no wider or rather longer than would be required for any one of the seven cylinders. This shortening of the crank-chamber not only effects a considerable saving of weight on its own account, but there is a corresponding saving in the shafts and other members, the dimensions of which are governed by the size of the crank-chamber. With regard to materials, nothing but steel is used throughout, and most of the metal is forged nickel steel. No castings are employed, and aluminium, although the lightest of metals, is in this case taboo. Needless to say good workmanship is essential, and we have often had occasion to remark that the Gnome engine works first and last because it is well made.

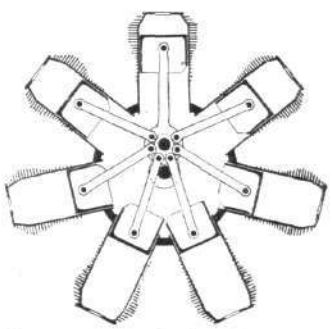
In making the parts—and particularly of course the cylinders—of steel, it is obviously desirable that they should, if possible, be air-cooled, which consideration, coupled with other matters, such as lubrication, all pointed to the rotary principle as being the proper lines along which to develop the original idea. In the rotary-type



View of the 50-h.p. Gnome rotary engine complete; also, in the centre, a view of the interior of the crank-chamber, and, on the right, a set of seven cylinders attached to the crank-chamber. Two such sets joined together make a 100-h.p. motor.



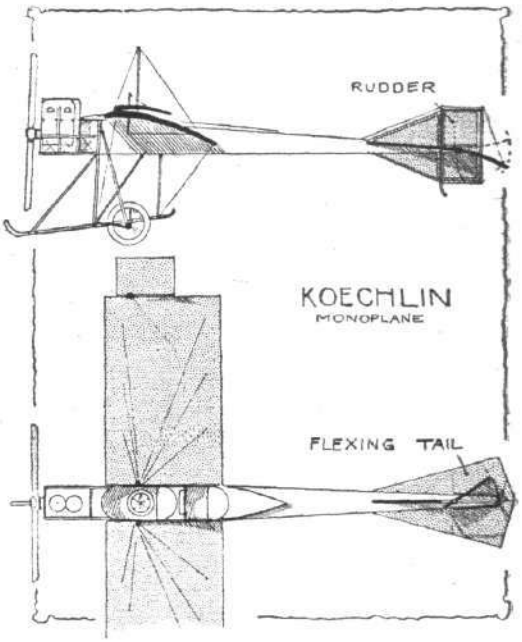
Sectional drawing illustrating the general arrangement of the 50-h.p. Gnome rotary engine.



Diagrammatic sketch illustrating the connections between the pistons and the crank-shaft of the Gnome rotary engine.

AEROPLANE SILHOUETTES FROM THE PARIS SHOW.

THE KOECHLIN MONOPLANE.



A FRENCH-BUILT monoplane, constructed at Billancourt. Framework of poplar wood with ash spars. It is on a machine of this make that Madame Niel, the first lady to obtain a pilot's certificate on a monoplane, has made many good flights.

General Dimensions.—Span, 10 metres; carrying surface, 26 square metres; overall length, 9·5 metres.

Seating capacity.—Two, one behind the other.

Chassis.—Two wheels arranged with a single skid in the centre; the wheels are so arranged that they adapt themselves to any unevenness in the ground over which they are travelling, while the skid is designed to protect the propeller when landing.

Engine.—70-h.p. 4-cyl. Labor, but a 50-h.p. Gnome or 50-h.p. Chenu motor can be fitted at slightly increased price.

Propeller.—Two-bladed Koechlin, made of wood, 2·5 metres diameter, 1·8 metres pitch.

Tail.—This consists of a flat plane, the rear end of which is flexible, to form an elevating flap. A vertical rudder is fitted above this tail plane, while in front is a triangular fin. A fin is also fitted below the tail.

Lateral stability.—Maintained by movable tips at the ends of the main plane.

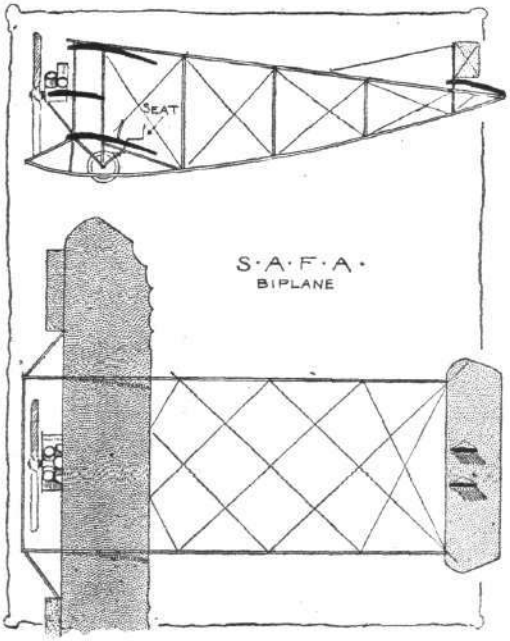
Weight.—320 kilogs.

Speed.—Not stated.

System of control.—By a single wheel of the motor car type mounted in front of the pilot. A backward or forward motion flexes the elevator, while the rotation of the wheel to the left or right operates the vertical rudders. For controlling lateral stability the wing tips are operated by the movement of the back of the pilot's seat, and it is claimed that this is done instinctively. The feet play no part in the steering.

Price.—Without motor, 13,000 francs; with Labor motor, 21,000 francs; and with 50-h.p. Gnome motor, 26,000 francs. The price of the single-seated machine is 11,000 francs without motor.

THE S.A.F.A. BIPLANE.



FRENCH-BUILT biplane, designed by MM. Caudron Frères, and built at Paris-Plage, close to Boulogne.

General dimensions.—Span, 8 metres; length overall, 8 metres; carrying surface, 22 square metres.

Seating capacity.—One; a two-seater machine is also built, but this has a carrying surface of 32 square metres.

Engine.—Five-cylinder 40-h.p. Anzani. Gnome motors can also be fitted, and if water-cooled engines are preferred the Eole motors are supplied.

Propeller.—Two-bladed Normale propeller of 2·1 metres diameter, which is driven at 1,200 revs. per min.

Chassis.—The lower members of the main frame are continued forward and brought close to the ground so as to take the place of skids. Two wheels are also fitted to facilitate starting.

Tail.—A horizontal plane is mounted at the rear of the machine, the forward part of this plane is fixed but the latter edge is free so that it can be flexed to form an elevator. Above this plane are mounted twin rudders.

Lateral stability.—Maintained by two ailerons placed between the main planes as in the Curtiss machine. In another type of machine warping of the main planes is utilised as on the Wright biplane.

Weight.—In running order 220 kilogs.

Speed.—75 kiloms. an hour.

System of control.—The warping of the rear elevator and the adjustment of the ailerons (or warping of the main planes, whichever is used) is controlled by a single lever worked by the pilot's left hand. The twin rear rudders are operated by a pedal while all the engine controls are so placed that they can be operated by the driver with his right hand.

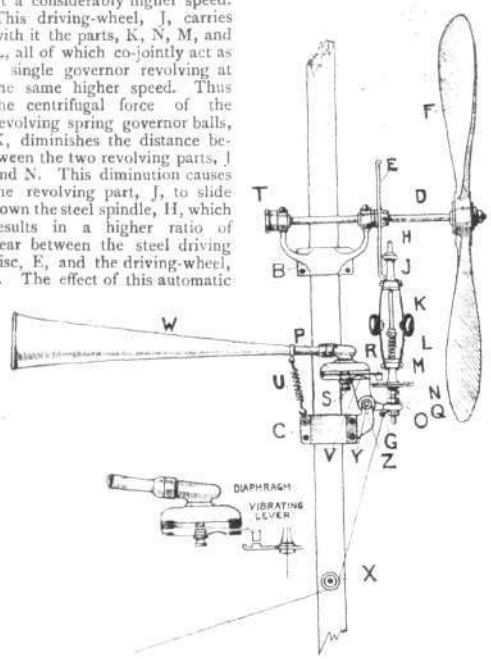
Price.—With 5-cyl. 40-h.p. Anzani, 14,500 francs; with 50-h.p. Gnome, 22,000 francs; with 25-h.p. Eole motor, 12,500 francs. The two-seater machine with 40-h.p. Anzani engine costs 16,500 francs.

SPEED-ALARMS FOR FLYERS.

SOME MORE COMPETITIVE DESIGNS FOR OUR £5 PRIZE.

[40] I have pleasure in submitting for your inspection the designs and description of my automatic speed siren for use on aeroplanes.

The action of this device, when attached to an aeroplane in flight, is as follows:—Assuming that the machine travels in the direction indicated by the metallic horn, W, the air-currents, relative to the device, will then be encountered travelling in an opposite direction. These air-currents in so travelling strike the blades of the air-race, F, which, being of a fine pitch, revolves, carrying with it the shaft, D, at a high speed. This revolving shaft, D, carries with it the steel driving disc, E, which in turn causes the driving-wheel, J, to revolve at a considerably higher speed. This driving-wheel, J, carries with it the parts, K, N, M, and L, all of which co-jointly act as a single governor revolving at the same higher speed. Thus the centrifugal force of the revolving spring governor balls, K, diminishes the distance between the two revolving parts, J and N. This diminution causes the revolving part, J, to slide down the steel spindle, H, which results in a higher ratio of gear between the steel driving disc, E, and the driving-wheel, J. The effect of this automatic

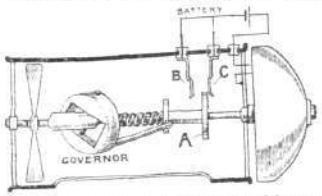


increase of gear ratio between the two revolving parts, E and J, causes the spring governor to revolve at an accelerated speed, thereby diminishing the distance between J and N to such an extent that the driving-wheel, J, finally revolves against the outer rim or lip of the steel driving disc, E. Thus, it will be seen, that any further acceleration in the speed of the governor results in an upward sliding motion of the vibrating wheel, N, against the compressed spiral spring, M. Insomuch that the vibrating wheel, N, now revolves at an excessively higher speed than heretofore, this sliding-up motion causes it, in so revolving, to come into contact with the outer extremity of the vibrating lever, R. Thus the vibrating lever, R, receives a number of exceedingly light and rapid blows in an upward direction, due to the raised ribs on the vibrating wheel, N, striking it at its outer extremity. This vibratory motion of the lever, R, is directly transmitted to the steel diaphragm by means of the adjustment screw, S. Insomuch that the lever, R, is somewhat weighted and vibrates between the steel diaphragm and the spring, V, the effect of this motion is to set the diaphragm vibrating very rapidly, thereby producing a note corresponding in pitch and intensity to the rate of travel. Thus, the sound emitted by the device automatically varies with the speed of the machine. Hence, when the machine is travelling at too high a velocity, the device emits a shrill penetrating note, and continues to do so until the relative velocity of the machine decreases to the normal rate of travel. If the device, however, is required to indicate when the velocity of the machine falls below the minimum rate of travel special adjustment is necessary. The device must then be adjusted to operate at the normal rate of travel, so that when the velocity of the machine fall below this normal speed the device will refrain from emitting any further sound until the machine has sufficiently regained its previous velocity.

Birmingham. H. NOBLETT.

[41] I beg to send you a drawing of a device to give an alarm by means of electric contacts, bell, and dry battery.

In the drawing herewith the disc, A, at the lower end of the sliding collar on governor shaft is pulled up by the action of the governor moving upwards as the speed increases, and can be arranged to make contact with piece, B, at a dangerously high

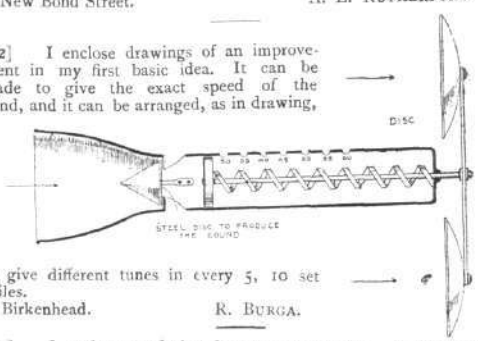


speed. Similarly at lower speeds the disc would be carried down by the collar and could make contact with piece, C, at a dangerously low speed. All speeds are shown on the dial of the indicator as well. I think a bell would give a better warning than a whistle. The drawing shows an accumulator, but this could be a dry battery for use in the air.

Of course, I must tell you this device has not yet been made; I give it as an idea of what might be done.

New Bond Street. A. E. RUTHERFORD.

[42] I enclose drawings of an improvement in my first basic idea. It can be made to give the exact speed of the wind, and it can be arranged, as in drawing,

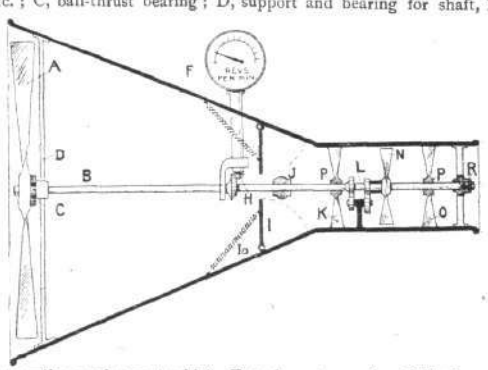


to give different tunes in every 5, 10 set miles.

Birkenhead. R. BURGA.

[43] I enclose my design for your competition. I have made and tested a rough model, and find it work well with a very strong and sensitive siren at varying speeds by the speedometer on my car.

A, propeller-fan; B, shaft carrying siren fan, pinions, propeller, &c.; C, ball-thrust bearing; D, support and bearing for shaft, B

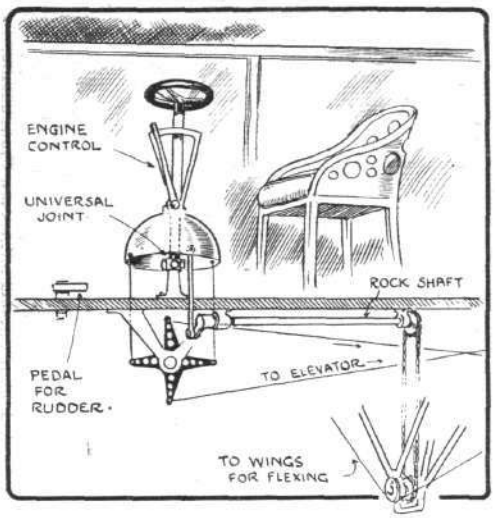


(streamline section preferable); F, tachometer, such as Elliott's rev. indicator or other make; H, pinions driving tachometer, one keyed to main shaft; I, hinged baffle-plates, to allow of adjustment of air-inlet by springs; I_a, springs for adjustment of air-inlet, enabling the speed at which siren operates to be regulated; J, second support and bearing for shaft, placed crosswise to D; K and O, fixed vanes of siren; L, gear-wheels for revolving vane to increase speed and power of siren; N, revolving vane of siren; P, bearings for shaft; R, ball-thrust bearing.

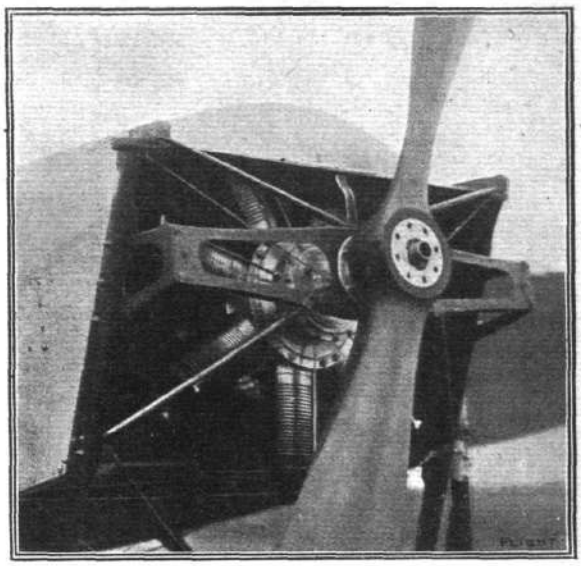
(Miss) C. DE H. BENEST.

steel tubes. Under the tail plane is a single landing wheel, sprung in the same manner as those on the carriage.

The two seats are placed side by side, that on the right being for the pilot, before whom is the control *cloche*. This consists of a column surmounted by a fixed wheel, serving the purpose of a handle.



Section through floor showing the special "cloche" control system in the Blériot two-seater monoplane.



BLÉRIOT TWO-SEATER MONOPLANE.—Detail view of the Gnome engine and propeller, and the method of mounting.

At the base of the column is a large bell-shaped member in aluminium surrounding the pivot on which the column is universally mounted. To this bell the control wires are attached. At the front and back are wires leading to the elevator; on the right is a bar leading to an arm below the body, which controls the warping of the wings. The two elevator wires are attached below the bell to a cross-shaped steel piece, from which run two wires direct to the elevators. Similarly from the flexing arm run wires to the rear spar of either wing. Reference to the accompanying sketch will explain such details as must ever remain complicated in any written description. The movements of the column for the purpose of control are all natural in action. To elevate the aeroplane the column must be pulled backwards, and a movement in the contrary direction brings the machine down again. Falling to the right is corrected by moving the column to the left, and *vice versa*. Directly below the hand wheel are placed the control levers of the Gnome motor.

The 50-h.p. 7-cyl. air-cooled Gnome motor is mounted in a special pressed-steel frame fastened to the front of the fuselage. This frame is covered above and at the sides by a sheet aluminium casing. Behind the frame, inside and across the body, are placed the petrol and oil tanks.

The make of propeller naturally varies according to the ideas of the purchaser, but as a rule the Chauvière Intégrale is fitted.

The price of the Blériot two-seater complete with Gnome motor is 28,000 frs.

In concluding we would acknowledge the courtesy of Messrs. L. D. Gibbs, Ltd., for the permission to photograph their Blériot two-seater for the purpose of illustrating this article. The machine in question is at Brooklands, where, piloted by Mr. Gilmour, it has made some of the finest flights yet performed above British soil.

Legagneux's Try for the Coupe Michelin.

WEDNESDAY of last week was a noteworthy day in French aviation annals, for no less than four records were beaten. One of these was that of Legagneux, who, mounted on his Blériot monoplane at Pau, flew for 5 hours 59 minutes, covering in that time 515·9 kiloms. (322 miles), his average speed working out to over 53 miles an hour. In the course of his flight Legagneux set up new records as follows:—

One hour	... 84 kiloms.	100 kiloms.	...	1 hr. 10 mins.
Two hours	... 171·9 ,,	200 ,,	...	2 ,, 20 ,,
Three ,,	... 258·5 ,,	300 ,,	...	3 ,, 28 ,,
Four ,,	... 345·5 ,,	400 ,,	...	4 ,, 38 ,,
Five ,,	... 432·2 ,,	500 ,,	...	5 ,, 48 ,,

After his long performance Legagneux was not particularly tired, and, in fact, within a few minutes he was in the air again flying on his monoplane over the hangar of the "Ville de Pau" in order to drop a message thanking his friends there for their congratulations. Legagneux, by his work, it will be specially noted, has not confined his attention to the biplane, on which he learned to fly and made his early successes. It was after the success of Leblanc and Aubrun in the Circuit de l'Est, when Legagneux was so pleased with the monoplane that he immediately started to practise with one, with the result that at the moment of writing both the world's altitude and distance records stand to his credit with this type of machine.

Cross-Country and Passenger Duration Record Beaten.

STARTING from Chalons Camp on the morning of the 21st inst., and accompanied, on his Henry Farman biplane, by Captain Hugoni, Lieut. Camerman flew to Montigny-sur-Aube and back again, the round distance of 232 kiloms. being covered in 4h. 2m. 30s. This performance, besides being a world's record for cross-country flights, also completely puts in the shade previous passenger flights. It was made in connection with the Lazare Weiller prize for the best cross-country flight by a military officer in uniform.

Other Competitors for the Lazare Weiller Prize.

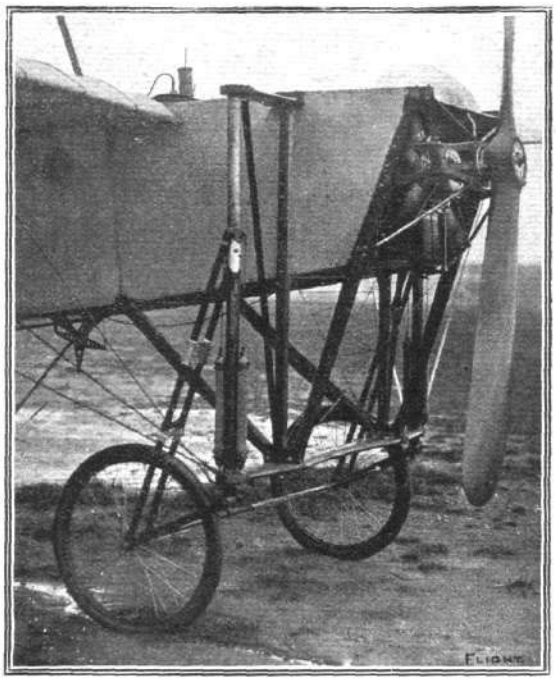
TWO other competitors also tried for the Lazare Weiller prize on the 21st, Lieut. Letheux starting from Mourmelon, but only going for a short distance before alighting, while Lieut. Byasson set out from Buc to fly to Blois and back. He had only covered 100 kiloms. of the journey, however, when he was forced to land owing to faulty ignition.

Leaving Mourmelon on his Henry Farman biplane, and accompanied by Lieut. Dedaux, Lieut. Letheux, on the 22nd, set out to fly to Cambrai and back, a distance of 260 kiloms. Between Nohain and Cambrai the aviators were forced to land, owing to a leak in the petrol tank, and at Vitry in Artois the aviators definitely abandoned their project from the same cause. The repairs were executed by some of M. Breguet's workmen, and after they were carried out Lieut. Letheux piloted his machine over to the La Brayelle Aerodrome.

The Oregon pine body is of the same box-girder construction used on all Blériot machines. Four slender wooden booms run the entire length of the machine, being strutted apart at intervals of 18 ins. or so, and tied by diagonal wire bracing anchored to small wire V-pieces, which also help to secure the strut-sockets. This method of construction and the use of these V-anchor-pieces is patented by M. Blériot. At the tail, the wooden booms come together to join a stern-post to which the single rudder is hinged. In front they open out, to admit of the seats and the engine-bearers.

The landing chassis differs but little in fundamental principles from that of the cross-Channel Blériot, except that it is, of course, much stronger. Two stout ash struts run from the engine to the lower cross bar of the carriage, while a similar pair are carried from a point further back on the body, thus ensuring great rigidity between the carriage and the frame that it supports. As is usual on Blériot machines there are no skids, but the two wheels are pivoted on castors so that they may turn in any direction. One great advantage of this system is that a sideways landing, so frequently made even by expert pilots, can happen with very little risk of damage, the wheels turning in the direction required, and running quite freely. On the other hand the absence of skids makes it less easy to withstand the shock of a clumsy descent, and even after a good landing the very freedom of the running of the wheels makes it difficult to stop in a reasonable distance.

The wings are double-surfaced with Continental aeroplane fabric spread over slender ribs of pine, which are themselves secured by brass screws to the two main spars of ash running the entire length of the wings. The front spar is situated about a foot from the entering edge of the wing and is secured to the body by a socket formed by a steel tube placed across the frame in front of the pilot. The rear main spar is attached by means of screws to the side members of the body. The planes are of slight curvature, and are suspended from a kind of trestle set above the body by several wire cables running to different parts of the wings, which cables on Messrs. Gibbs'



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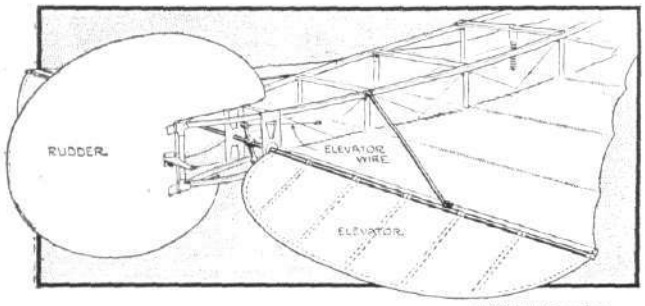
BLÉRIOT TWO-SEATER MONOPLANE.—The front portion of the chassis.



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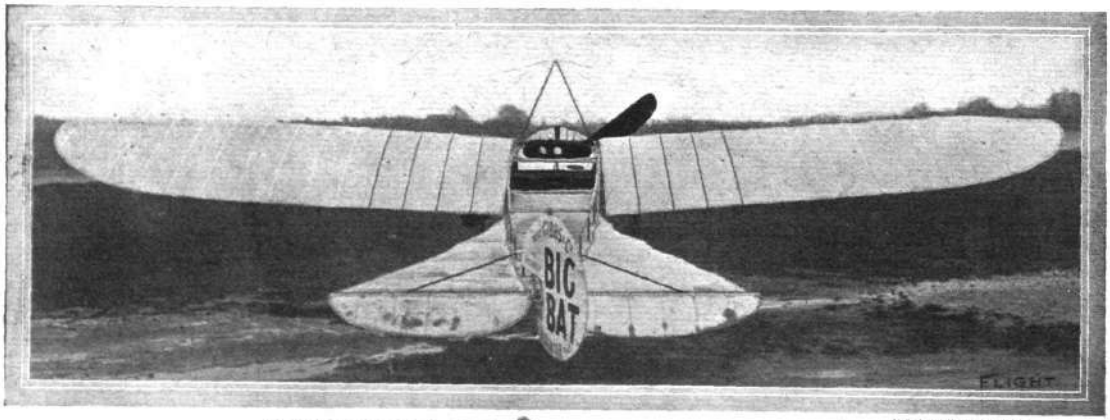
Sketch showing mounting and control of the elevator of the Blériot two-seater monoplane.

machine are duplicated in every case. Below, the wings are attached to the carriage by steel tapes an inch broad. The wires effecting the flexing of the wings for the recovery of lateral stability are duplicated.

The tail of the two-seater is different to that of any other Blériot in that it is of the non-lifting type, and has the elevator (which is made in two sections to allow space for the rudder) hinged to its trailing edge. The shape can best be realised by reference to the general plan of the machine annexed to this article. The framework of the tail is of steel tubes, over which the fabric is stretched. The broadest part is at the rearmost edge, where it is 12 ft. span. Along this edge runs a steel tube, to which the elevator is hinged. This tube is stayed at the upper edge of the body by two



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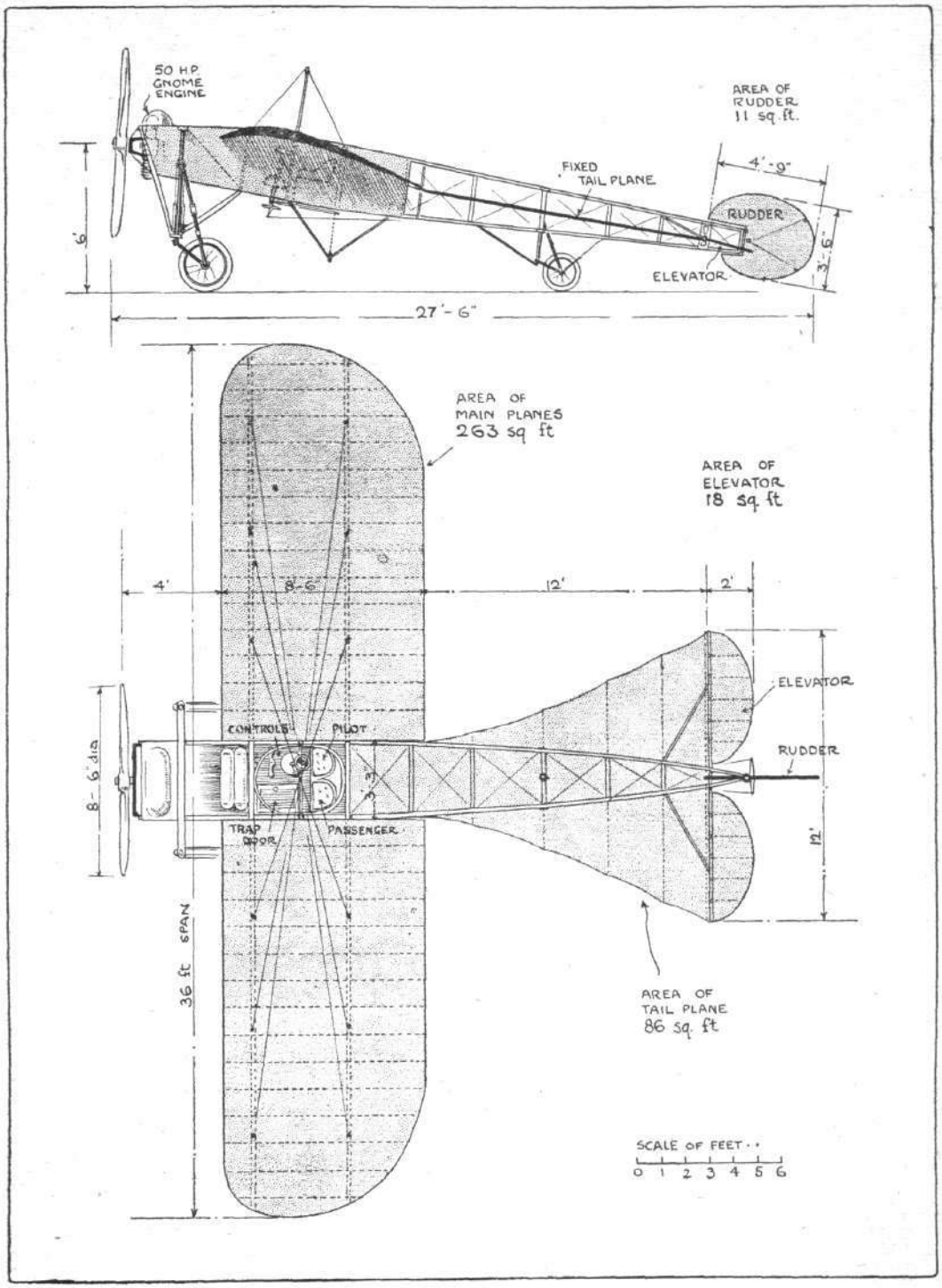
BLÉRIOT TWO-SEATER MONOPLANE.—View from behind.



BLÉRIOT TWO-SEATER MONOPLANE.—Elevation and plan to scale.

FLIGHT

FOREIGN AVIATION NEWS.

World's Speed Passenger-Carrying Records Beaten.

COMPETING for the Coupe Deperdussin, Laurens, at Buc, on the 21st inst., mounted on his R.E.P. monoplane, succeeded in beating the passenger-carrying speed record. Accompanied by a friend, M. Hickel, he rose from the ground soon after two o'clock, and had completed the 100 kiloms.—10 laps of the 10-kilom. course—in 1h. 36m. 6s. His lap times were very regular, his fastest of 7 mins. 31⅕ secs. being the first, while curiously his slowest was the last, 7 mins. 59⅕ secs. His average speed worked out to 78·074 kiloms. an hour. The following are the new records:—

kiloms.	h. m. s.	kiloms.	h. m. s.	kiloms.	h. m. s.
10 ...	0 7 31⅕	50 ...	0 38 19⅖	80 ...	1 1 8⅕
20 ...	0 15 14⅘	60 ...	0 46 51⅕	90 ...	1 8 52⅖
30 ...	0 22 56⅘	70 ...	0 53 29⅗	100 ...	1 16 51
40 ...	0 30 39⅕				

Mdlle. Dutrieu Betters Her Own Record.

ONE of the remarkable series of record performances in France on the 21st inst. was made by Mdlle. Helene Dutrieu at Etampes on her Henry Farman biplane. Competing for the Coupe Femina, she started off at ten minutes past two and was flying for 2 hrs. 35 mins., when she decided to come down as the gathering darkness made it difficult for her to see her way. She had then covered 167·2 kiloms. The first 100 kiloms. were completed in 1 hr. 32 mins., while the time for the 150 kiloms. was 2 hrs. 20 mins. In the first hour the distance travelled was 62·9 kiloms., and during the second hour 66·6 kiloms. were added to this score. By this flight Mdlle. Dutrieu completely put in the shade her previous record of 1 hr. 9 mins., and Mdlle. Marvingt's time of 53 mins.

Another "Flight" Idea Adopted.

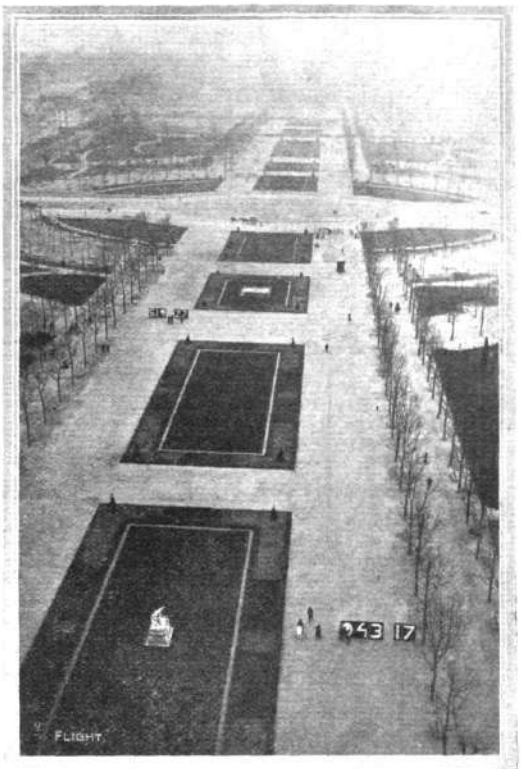
SOME time ago, our readers will remember, that we advocated the offering of a prize to be awarded to the aeroplane which should show the greatest difference between the fastest and the slowest speed at which it could be flown successfully. This idea has now been adopted in France by the Marquis de Dion, who is advocating the organisation of an event of some such nature, to be known as "Le Prix du Grand Ecart."

French Military Aeroplane Competition.

FOLLOWING on the representations made by the leading aeroplane manufacturers of France, especially M. Breguet, the French Government have decided to postpone the latest date for entries to be made for the Aeroplane Competition from January 1st to July 1st next year. It was pointed out that as a result of trials which are now being made many of the manufacturers do not know for certain what type of engine they will adopt for the military machines, and so they could not properly fill up their entry form. It will be remembered that the machines have to be fitted with the engines mentioned in the entry forms when they are presented for the eliminating trials on October 1st.

A Long Flight by Thomas.

ON Christmas morning Thomas, on his Antoinette monoplane, in view of his project to try to win the Michelin Cup, made a flight of 2 hrs. 35 mins. duration. During the first hour he completed



AIR GUIDE SIGNS.—Experimenting in Paris from the Eiffel Tower with silvered-glass ball guide signs for aviators. The above photograph shows the legibility of the proposed 1·75-metre letters as seen from the first platform of the Eiffel Tower, 100 metres high (328 ft.). There are six sets of figures at various distances, although in the photograph the further figures are not discernible. At night these are to be strongly outlined by electric lights.

FRENCH AIR GUIDE SIGNS.—The proposed 1·75-metre figures on the ground, showing the relative size to a man. The "globes" are the silvered-glass balls which lend themselves for night illumination.

78·2 kiloms., and at the end of the second hour this had been a little more than doubled, the figure being 157·5 kiloms., while 210 kiloms. were covered in the 2 hours and 35 mins.

Lanser Flies for the A.C.F. Grand Prix.

MOUNTED on his Henry Farman biplane and accompanied by M. Pannier, Lanser left Issy on the morning of the 22nd with the intention of flying to Brussels and back. Almost immediately after he started, however, a thick mist came on and the aviator lost his way. After being in the air for 40 minutes, during which he was circling over Neuilly for some time, the aviator landed on the Rothschild Island at Puteaux. He has announced that he will make another attempt at the first opportunity.

Tabuteau Again Tries for the Grand Prix.

ACCOMPANIED by a photographer, M. Senouque, M. Tabuteau set out from Issy, on the morning of the 21st, on a new attempt to fly to Brussels and back for the A.C.F. Grand Prix. He had not proceeded far, however, when he found the drizzling rain and mist too trying, so decided to turn back. Later in the day, accompanied by his wife, he flew back to Buc, with the intention of making an attempt to better Legagneaux's record for the Coupe Michelin.

Wireless Telegraphy and Flight.

EXPERIMENTS are being carried out at Buc, by Mr. Maurice Farman, with a wireless telegraphy apparatus fitted to one of his aeroplanes. It is stated that, on Monday week, Mr. Farman was successful in transmitting messages for over a distance of about 6½ miles, but he hopes to considerably exceed this distance very shortly.

Doings at Issy.

DURING last week, after a blank period due to the inclement weather, a good deal of flying was carried out at Issy. On the 19th inst., Busson was testing the Deperdussin monoplane, which he proposes to use in his Paris to Brussels flight, and Parent was also trying the monoplane of his own design. A Zodiac biplane, piloted by Jacques Labouchere, made several rounds of the ground at a height of 20 metres, and in a later trial the machine carried a passenger besides the pilot. In addition to these machines several pupils of the Bonnet-Labranche, Thomann, Pivot, and C.I.N.A. schools were taking lessons.

Prince de Nissole Flying on his Tellier.

ON the 19th inst., the Prince de Nissole was at the Tellier School at Juvisy-Draveil with the intention of flying to the Tellier School at Etampes. He rose to a good height and flew over St. Georges and Soissy-sous-Etoiles. When at a height of 400 metres, however, he found the wind was unfavourable and therefore decided to come down and postpone his little trip.

Distinguished Visitors at Etampes.

ON the 13th inst., Mr. Henry Farman was visited at his Beauce aerodrome at Etampes by MM. Barthou and Archdeacon, both of whom were taken for short trips in the air, after which Madame Archdeacon and her son were also taken for a brief aerial excursion by Mr. Farman.

Sommer School at Mouzon.

IN view of his proposed attempt to fly from Douzy to Mourmelon, *via* Rheims, Jules Noël was busily engaged last week in trial flights, and on the 21st inst., made one trip of an hour and a half's duration. At the same time Bathiat was trying the Sommer monoplane, and made several satisfactory short trips.

Aviation in French Colonies.

IN a note printed by the French Minister of War it is explained that the vote of £16,000 asked for in connection with aviation in the Colonies is intended mainly for French West Africa, the Government of which colony has offered to share the expenses of the experiments. General Brun states that the money asked for will be used in the purchase of aeroplanes, which should be on the spot at the end of January. It is proposed to start with seven aeroplanes, and to build the necessary sheds, &c., for them. Should this prove satisfactory the Government has the intention of making a similar proposal in regard to the French Colonies in the Far East.

A Mayor and Mayoress in the Air.

IN the course of a series of exhibition flights made by Kimmerling at Lyon, he carried several passengers for short flights, including M. Herriot, Mayor of Lyon, and his wife. During a 30 minutes' flight he flew over the villages of Genas, Chassieux, and Parilly.

The Tour of Belgium.

AT a meeting of the Sports Committee of the Belgian Aero Club on December 21st, it was decided to select the dates August 5th to 21st for the Aerial Tour of Belgium. The aeroplanes will leave Brussels on August 6th and complete the tour in seven stages, there being a day's interval between each of the stages, so that they will arrive back at Brussels on August 20th.

First Belgian Military Pilot.

THE Belgian Army now boasts a fully-certificated military aviator, Lieut. Nelis having successfully passed the necessary tests at Kiewit-les-Hasselt aerodrome on the 22nd. Later on the same day Lieut. Nelis made another flight of 2¾ hrs.

To Aid Night Experiments.

IN order to enable experiments to be carried out at night both with aeroplanes and dirigibles, two great reflectors illuminated by 50 electric lamps had been fixed on the roof of the German military dirigible garage at Spandau. In each case the lens points towards the sky. One of the reflectors has a diameter of 187·5 mm., and is visible over a distance of 15 kiloms., while the other, which is 300 mm. in diameter, can be seen for a distance of 30 kiloms. The first is fixed, but the second is so arranged that it can be moved in any direction, and used as a searchlight to aid in discovering attacking aerial craft at night.

Brunnhuber, the German aviator, on his "Albatross" biplane, with his four passengers, whom, on December 7th, he carried twice round the Johannisthal flying grounds.

A New German Military Aeroplane.

A NEW aeroplane, intended for military use, will shortly be tested at the Bornstedt military parade ground. This machine has been designed by two German engineers named Kormann, in conjunction with Dr. Ewald. The machine weighs, without the pilot, 300 kilogs., the planes are 12 metres span, and the lifting surface is 24 square metres. The aeroplane, which has been named "Garuda," is fitted with a 50-h.p. motor.

From Johannisthal to Teltow.

LEAVING Johannisthal flying ground at half-past two on the 21st inst, and flying at a height of about 150 metres, Hanuschke landed half-an-hour later close to Teltow.

Cross-Country Flying in Spain.

USING his Sommer biplane, the aviator Mauvais flew from Guadalajara to the military aeronautic park at Madrid in 40 mins. Col. Vives, the aeronautic expert of the Spanish Army, followed the flight in his motor car.

New Height Record.

A CABLE from New York states that on Monday last at Los Angeles, Hoxsey on his Wright biplane succeeded in ascending to a height of 11,474 ft. We await confirmation.

WRIGHT BROTHERS' VIEWS ON TRICK AND SPECIAL FLYING.

ON several occasions recently various reports have been circulated as to the opinions held by the Wright Brothers regarding flying and altitude and speed competitions. An interesting letter has just been written to our American contemporary, *Aero*, by Mr. Wilbur Wright, in which he defines their "exact position regarding the relative methods of fancy flying and altitude efforts, as compared with cross-city, cross-sea and cross-mountain flying. We believe," he says, "in all kinds of flying which demonstrates the *merits of the machine*. Among such tests we regard as valuable, demonstrations of control, duration contests, weight-carrying contests, altitude contests and speed contests.

"Of all the qualities which an aeroplane should possess, capacity of control is by far the most important, since safety in the fickle air is absolutely dependent upon abundant control. The machine which is most amenable to ready control in calm air is the one which will fly most safely in high winds or in the sudden fierce whirls which are particularly abundant on quiet sultry days. I believe that fancy flying is a more definite and much safer method of determining the merits of machines in this respect than flying in a gale, as Hoxsey, Johnstone and Brookins did at Belmont Park during the second hour on Thursday, when everyone else refused to go out. That demonstration was only a proof under extremely dangerous conditions of what they had already shown many times by their fancy flying under safer conditions. I am absolutely opposed to carrying fancy flying to extremes merely to provide 'thrillers,' but legitimate fancy flying is safe and at the same time exceedingly valuable training exercise for the purpose of acquiring presence of mind and facility in the control of machines. Without such practice Brookins, Johnstone, Hoxsey could not have safely flown in that high wind at Belmont.

"In general I am opposed to demonstrations of any quality by tests under dangerous conditions, if there is any way to determine the same quality under safer conditions. For this reason I am opposed to flights over cities, flights over seas, flights over mountains, &c. &c., in which the flying part is no different from other flying, but differs only in the consequences of a forced descent. These are not demonstrations of capacity, but of useless bravado.

"Altitude flying is also an excellent test of the quality of a machine, and not dangerous to a sound man until the altitude approaches 20,000 ft. At present no machine in the world has the capacity to reach a height really dangerous. Very few can reach 5,000 ft. With one exception, all the men who have passed the 9,000-ft. mark have been stopped by the fact that their machines practically refused to rise higher. Altitude flying, with proper consideration of horse-power and weight carried, is fully as good a proof of the scientific perfection of wings, screws, &c., as speed contests, and is *very much safer*. Altitude contests might be improved, however, by placing a time-limit on them, so as to make the rate of ascent the real determining factor.

"The most valuable contests are those which demonstrate with greatest definiteness and least danger the presence of the quality sought. The machine which will fly longest and manœuvre best over safe grounds will in time of real need fly farthest and in the worst weather over seas, cities or mountains."

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CORRESPONDENCE.

*** *The name and address of the writer (not necessarily for publication)* MUST *in all cases accompany letters intended for insertion, or containing queries.*

Correspondents communicating with regard to letters which they have read in FLIGHT, would much facilitate ready reference by quoting the number of each such letter.

NOTE.—*Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.*

CRUCIFER AEROPLANE.

[986] Will you kindly permit me to refer to the letter, 914, addressed to you from a Moseley correspondent, in which it is stated that the Crucifer aeroplane "embodies the ordinary principle of automatic lateral stability obtained by means of a pendulum," and also that the body is "underhung."

My intention is not to discuss the efficiency of the pendulum principle of automatic lateral stability, nor to compare the merits of the high and low centres of gravity, but simply, with your permission, to disclaim the existence of the pendulum principle and the low centre of gravity in Crucifer.

The pendulum in Crucifer, your correspondent states, is the "great mass, the whole mass of the body, in fact."

As defined by Webster, the pendulum is: "A body so suspended from a fixed point as to swing freely to and fro by the alternate action of gravity and momentum." Where is the fixed point from which the body of Crucifer is suspended so that it may freely swing to and fro? It is not in the firmament or the aeroplane could not advance. It is not in the collar to which the supporting surfaces are attached, and which encircles the body, because the collar may move about the body without communicating motion to the body; and this would be impossible if the body were suspended from a fixed point in the collar.

In flight, the conditions are these: at the centre of its balance the body is encircled by the collar, and, about that centre, is thus supported at all points but fixed to none. In fact, there is no fixed point. And, the necessary fixed point being absent, the body cannot swing freely to and fro. This absence of a fixed point, and of a swing to and fro, mean the absence of the constituents of a pendulum from the body of Crucifer, which is therefore, in fact, not a pendulum.

Your correspondent also writes: "The underhung body would seem," &c. This is a statement that the body of Crucifer is underhung. May I refer him to your issue of FLIGHT of October 15th, in which the illustrations of the machine plainly show the body exactly midway of the gap. He will see that it is, in fact, not underhung; and if he will refer also to the FLIGHT issues of December 3rd and 10th he will find photographs of a machine with all the weight hung under the lower plane. Contrast of these with the illustrations of Crucifer will convince him of his error. His deduction from his erroneous statement is expressed thus: "The underhung body would seem to be unwieldy when turning corners." It is not underhung, and cannot, therefore, be thus reasoned to be unwieldy. It is, in fact, not unwieldy.

But should he consider it unwieldy because of its shape, I refer him to the "Rapport sur les Experiences de M. Canovetti." These "Experiences," confirmed by Renard and others, and their conclusions publicly endorsed by you in the fourth of your series of articles entitled, "Can we fly faster for less power?"—see FLIGHT of October 22nd—would imply that the shape of the body of Crucifer is the best for aerial navigation yet conceived by the scientific mind.

Haywards Heath. L. BEAUCLERC GOLDMAN.

BOMB DROPPING.

[987] In reference to the recent correspondence in FLIGHT regarding "Bomb dropping" might I suggest that this opportunity be taken of making it publicly known, that a would-be patriot, by firing at an enemy's aeroplane from the vicinity of a town or village, might cause such town or village to be regarded by the crew of the aeroplane as defended or fortified, and they might deem this sufficient cause for destroying it. Possibly your journal could save the lives of many non-combatants by making this widely known.

Marylebone. HARRY TURRILL.

HIGH-SPEED GLIDING.

[988] Is a high-speed man-carrying glider feasible, bearing maybe a considerable weight per sq. ft. of lifting surface? By a high speed I mean speeds equal to and beyond the lifting speed of modern aeroplanes on which planing to earth is exhibited. A starting appliance would probably be necessary, and a safe mode of landing is assumed available. Descents into water would not be unfeasible with extremely high speeds. Mr. J. T. C. Moore-Brabazon has recently suggested uses for an aeroplane made to normally descend into water.

Can you refer to any experiments with large-weighted models, giving initial and average speed, distance, and gliding angle? I suggest that these data would be useful and practical if given with motion at, say, 90 ft. per sec.

Apparently flight originated, at any rate as far as the Wrights were concerned, with a low-speed glider; and another form of gliding, although not hitherto pursued with success, might nevertheless with modern experience throw light both on the landing

appliances of aeroplanes, and also upon the construction necessary to attain greater speeds with proportionately less power.

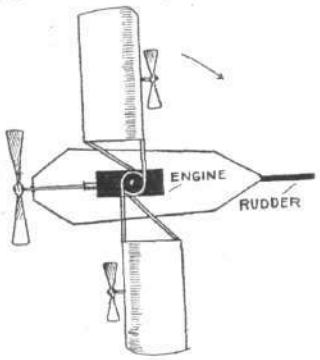
I may incidentally remark that gymnasts do not find it unpleasant to be shot from a spring gun across a large hall.

Birmingham. C. E. WILSON.

[Others than gymnasts might object to spring-gun propulsion, and there is little doubt but that the dangers and difficulties of high-speed gliding would be considerable. For one thing the gliding angle would be steep and that would increase the trouble of alighting without shock. Practice over water would be the only feasible way at present, and in course of time this mode of flight may become popular. Mr. Jack Humphreys originally experimented in gliding from a cliff because, being an expert swimmer, he felt safer under conditions that would terrorise most people. Lanchester's experiments with high-speed models are the best known of their kind.—ED.]

HELICOPTER.

[989] Having seen several ideas of direct lift machines in your paper, I enclose a rough sketch of what I think is feasible.



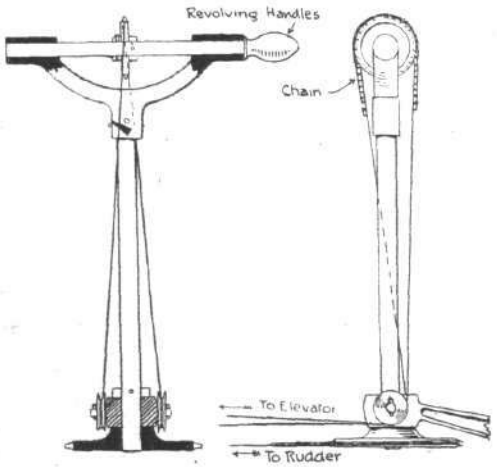
Instead of driving a large propeller, why not build the two main planes like one, and leave it free to revolve on a shaft, with two smaller propellers driven from the engine by shaft or chain to pull the revolving planes round. When revolving fast enough it would tend to lift the machine vertically, and when the machine was high enough, with a clutch the front propeller could be put into action to drive the machine along.

G. P. BROOM.

Hounslow.

REVIVING AN OLD DEVICE.

[990] It may be of some assistance to your numerous readers who are experimenting with flying machines, if they had their attention directed to the peculiar single lever control, which was at one time very popular with the old bone-shaker bicycle. By means of revolving the handles about, the brake was applied at the same time, not interfering with the steering, which was caused by moving the



handles in a horizontal plane. While the brake is no longer a necessity, it could be utilised to elevate or depress the planes, while by turning in the horizontal it could be utilised by working rudder right or left. A rough sketch of possible adaptation to this purpose I enclose.

Gillingham. S. COPNER.

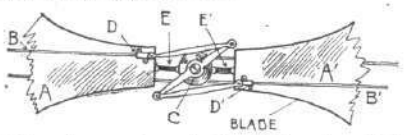
MODELS.

PROPELLERS FOR MODELS.

[991] I submit to you the following idea in order that your readers may let me know, through your paper, if it merits any experiments.

It is intended to make elastic-driven models travel at a uniform speed.

Referring to the sketch, the blades, A, A, slide along the parallel wires, B, B (which are passed through and fastened to the boss, C), by means of the bearings, D, D, and two others on the other side



of the blades. At normal speeds the elastic springs, E, keep the blades in, but if the speed increases the latter fly out, thereby giving a greater pitch, and so adjust themselves to the varying power that the knots in the latter are smoothed out as it were.

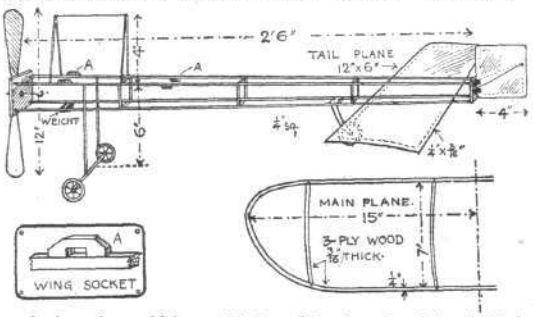
The arrangement of levers at the centre is to keep the blades equidistant from the boss.

I shall be glad to have my theory pulled to pieces, and any mistakes pointed out to me.

Darlington. "ENTHUSIASTIC."

A BLÉRIOT MODEL FOR 2s. 6d.

[992] The accompanying sketches show details of a model Blériot that can be built for half a crown, and with which I have had very fair success. Properly made it is a model that will rise of its own accord after a short run along the ground. The body is



made throughout of $\frac{1}{8}$ in. sq. birch, and the front board just behind the propeller is a piece of three-ply wood of 1 in. side. The tail board is a similar piece of half the dimensions. The skeleton framework of the main planes is also cut out of three-ply wood, a fret-wood saw being used for this purpose. It is necessary to bend the rib slightly, as shown in the illustration. The method of fastening the planes to the frame by a socket is shown by the inset sketch. Parchment paper such as is employed to cover jam jars serves very well for surfacing material. If the wheels cannot be obtained from an old toy they, like the main planes, can be cut out of three-ply wood. Letter No. 685, in a recent issue of FLIGHT, shows a very good way of mounting them. The rudder is fastened to the body with hinges, and may be made adjustable by means of wire. A piece of silver spruce can be whittled out in the form of a propeller, and should be set to an angle of about 60°. Aluminium can be used if preferred. The propeller-shaft is a bicycle spoke, and the thrust-bearing a bead. Sixteen or even more strands of elastic will be required, but while the motor will cost 1*s.* 6*d.* the wood will only cost 8*d.*, the bicycle spoke 2*d.*, and the odds and ends another 2*d.*

Wimbledon. GORDON TUCKER.

TORQUE.

[993] Would you be kind enough to give me, through the medium of FLIGHT, answers to the following queries: 1. What is "torque"? 2. How can I find the torque an elastic-driven model requires in order to know the thickness of elastic to use?

Bow. QUERIST.

["Torque" is synonymous with "twist," considered, of course, as a force and not as an actual stretching of the material. The

force of torque is increased in pounds-inches or any other suitable unit representing pressure at the end of a lever attached to a shaft. The torque on a shaft is the work transmitted per revolution $\div 2\pi$.

With elastic motors the only reliable way is to base calculations on experiments.—ED.]

MODEL SCREWS.

[994] I should advise Mr. Burgoyne (No. 877) to continue the vertical posts of his front landing chassis downwards, so as to allow of a larger diameter screw being employed. Even with the amount of elastic used by Mr. Burgoyne, I do not think an 8 in. tractor would exert nearly enough thrust—certainly not the 3½ ozs. (about) which is needed—in order to make his model fly. I think a tractor of even 12 ins. would not be excessive.

The chord seems somewhat large, also, but I think the model would certainly fly if more power were put on to it.

I am building a large-scale model Wright, and should be very pleased to correspond with any others who have done the same, or any other scale model.

Newcastle-on-Tyne. H. WELCH.

TWIN-SCREW MODELS.

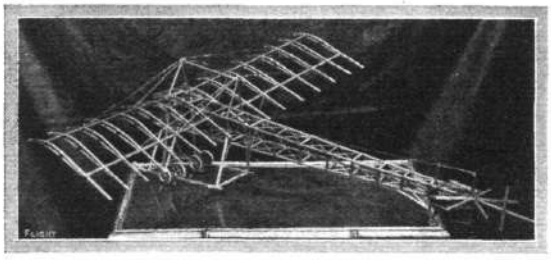
[995] I am not surprised to see Mr. Ryley's letter (875) relating to my advice to Mr. Pinnock, seeing that the arrangement shown in my letter was obviously incorrect. I would, however, point out that the error was not really mine but was no doubt caused in the first place by the roughness of my sketches, which were hurriedly done.

I should have written on this point before, but I thought that it would have been obvious to anyone that the arrangement shown was a mistake and that that shown by Mr. Ryley in Fig. 1 was what was intended. However, I apologise to the Editor and those who were not able to see the error if I am in any way to blame.

Coventry. LEONARD MEEK.

MODEL AEROPLANE.

[996] I have pleasure in enclosing a photo of the framework of a model "Avis" monoplane which I have since completed. The span is 29 in. and overall length 30 in., and is entirely my own make with the exception of the wheels and wire strainers. It is essentially a show model, being equipped with seat, steering control, model



engine, &c. The landing arrangement is a combination of wheels and skids, the wheels being sprung with rubber bands.

The wood used was $\frac{3}{16}$ in. square American white wood, the main frame being trussed throughout with diagonal wires.

The ribs of the wings, which are double surfaced, are of $\frac{3}{16}$ in. by $\frac{1}{32}$ in. wood, the upper and lower ribs being steamed to their respective curves.

The propeller, 6 ins. diam. by 2 ins. pitch, is a laminated one, being built up of cedar and holly wood.

I also wish to thank you for the information with which you supplied me a few weeks ago concerning the model.

Portsmouth. A. G. EVANS.

[We congratulate our correspondent on the apparent excellence of the workmanship and attention to detail in this model.—ED.]

LANTERN SLIDES OF MODELS.

[997] I am about to compile a series of photographic lantern slides, dealing with model aeroplanes, and it occurred to me that readers of your invaluable journal, FLIGHT, could help me considerably by sending photos of models they have made, together with the undermentioned particulars:—Span, length, total area, size of propeller, total flying weight, date of completion, name and address of maker; also give length and duration of flights (if any or glides.

It is necessary that photographs intended for the production of lantern slides should be very clear, and free from blemishes. Those printed on glossy bromide or glossy P.O.P. give the most satisfactory results.

I might add that I shall make the slides myself, and can therefore guarantee the safety of all prints entrusted to my care, and return them quite uninjured, if desired, in the course of a few days.

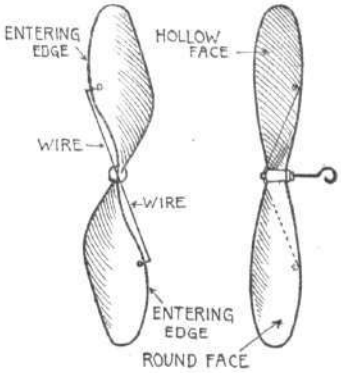
Trusting that model makers will be good enough to fall in with my suggestion, and thanking them in anticipation.

LEWIS E. RICHARDS.

Ocean View, Suffolk Road, Lowestoft.

MODEL PROPELLERS.

[998] To those model makers who make their own bent wood propellers and tractors, the enclosed sketch and hint may prove useful. For large screws over 12 in. diameter fix two stay-wires, as shown, taking hold of the entering edges. By means of these wires the pitch can be slightly reduced if desired, at the same time they prevent the screw from flattening back to any great extent, either whilst revolving or through the effect of damp.

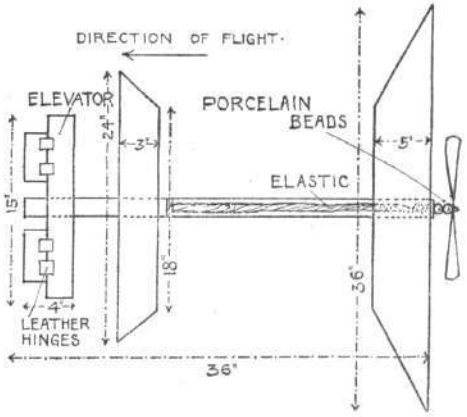


WM. P. DEAN.

Oldham.

MODEL MONOPLANE.

[999] I am enclosing a plan of a "tail first" monoplane, which I think will be of some use to your readers. Its planes are made of glazed linen, and the spars are $\frac{3}{16}$ in. square. The elevator, I



think, will be a new feature. The whole cost of the machine is 2*s.* 2*d.* With careful making this machine will fly 150 to 170 ft., if set going down a hill.

Liverpool. J. C. B. (age 15).

MODEL DIRIGIBLE.

[1000] I am building a model dirigible of 2 ft. by 8 ins. dimensions. The envelope I am thinking of making with proofed silk; could you enlighten me if this would do if stretched over a cane framework, as the model is of the rigid type? Will the bag need to be inflated under pressure, if so could you advise a means of doing so from an ordinary gas-burner, and do you think a car of, say, ½ lb. weight would be too heavy for it to lift?

Hackney. GEORGE BAYLIS.

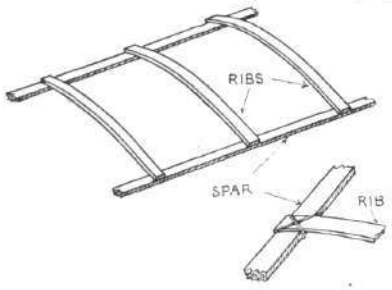
[It would probably be better to make the gas-vessel itself in the form of a bag to go inside the framework, as the air could be

squeezed out of the bag and the bag more easily inflated with gas after it had been inserted through a suitable orifice in the framework. The expansion of the gas-vessel would then drive out the air from the exterior shell.

It is not difficult to calculate the lift. For rough approximations allow ·4 lb. per 10 cubic ft.]

SINGLE-SURFACED PLANES.

[1001] Your correspondent, A. J. C., letter No. 731, wishes to know how to construct a single-surfaced plane. The sketches enclosed may be of some use to him. The main spar, A, Fig. 1, is laid flat on a bench, the ribs, B, are steam bent to the desired camber, and the ribs are seccotined or glued to the spars, or they



can be bound, Fig. 2, with strong thread; a weight should be laid on the glued part of the ribs, and left to dry. Another method is to nail the ribs to the spars; these nails can be got specially for the purpose. The fabric is fixed in the following manner: Stretch it on a bench, pulling as tightly as possible, then seccotine the ribs and spars of the planes, and lay on the fabric, and pull from end to end of plane, *not* from leading edge to trailing edge, then leave to dry.

Cambridge. E. G. NORFIELD.

COMPRESSED AIR ENGINES.

[1002] With reference to query No. 853, seeking information about compressed air engines for models, I am forwarding to you the following reply:—

A most successful engine working on compressed air is the Audax engine. This is a miniature engine of the rotary type; there are eight cylinders, and the valves are operated off a common eccentric. The diameter is only about 7 ins. over all, and the engine, which develops 1-h.p., only weighs 580 grammes. Together with the rotary engine is a reservoir and reducing valve to maintain equal pressure, and special means are provided to prevent condensation of the air to liquid due to the cold developed on the fall of pressure in the reservoir. The whole machine is strongly and simply constructed, and is thoroughly suited to model experiments. The speed can be regulated from zero to 1,500 revolutions. Unless any power is available, the reservoir can be charged by a small hand-pump.

London, S.W. CECIL J. L'ESTRANGE MALONE.

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A Book for the Bairns.

AT this season of the year, when grown-ups are wont to indulge in the purchasing of pretty little books for the amusement of the young folk, it is sometimes difficult to know what to buy and what will suit the exacting taste of the rising generation. We think, however, there need be no question that the "Adventures of Kendrick Montgomery Stuart" will be favourably received. Miss May Mulliner, the talented daughter of Colonel A. F. Mulliner, has told the adventures in a series of witty verses, while each is illustrated by a very clever full-page drawing. That they are up-to-date may be gathered from the fact that they include a visit to the North Pole, in which a monoplane plays a part. Altogether the little book is one which can profitably be placed in the hands of children. It is published at the price of 1s. by Messrs. Clark and Sherwell, of Northampton.

PUBLICATIONS RECEIVED.

The Boys' Book of Airships and other Aerial Craft. By Harry Delacombe. London: Grant Richards, Ltd. Price, 6s.

Catalogues.

The "Bristol" Aeroplanes. The British and Colonial Aeroplane Co., Ltd., Bristol.

The "Valkyrie" Aeroplane and Hendon Flying Grounds. The Aeronautical Syndicate, Ltd. Collindale Avenue, Hendon, N.W.

RECORDS.

Duration.—Henry Farman (France), at Etampes, on a Henry Farman biplane fitted with a Gnome motor: 8 hrs. 12 mins., covering 463 kilos. (288⅜ miles).

Distance.—G. Legagneux, at Pau, on a Blériot monoplane; 515·9 kilos. (322 miles) in 5 hrs. 59 mins.

Altitude.—G. Legagneux, at Pau, on a Blériot monoplane with Gnome motor: 3,200 metres (10,746 ft.).

Speed.—A. Leblanc (France), on a Blériot monoplane, fitted with Gnome motor, 5 kilos. in 2 mins. 45⅘ secs. = 108 k.p.h. (67·5 m.p.h.).

Straight Line (not recognised by F.A.I.).—J. Radley (Great Britain), at Lanark, on a Blériot monoplane with Gnome engine: 1 mile in 47⅘ secs. = 75·95 m.p.h.

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Aeronautical Patents Published,

Applied for in 1909.

Published December 29th, 1910.

28,253. A. H. FLINT, HUGHES AND LANG. Aerial propellers.
29,066. R. JAQUES. Aerial machine.
29,716. J. L. GARSED. Operating planes and rudders of aerial machines.

Applied for in 1910.

Published December 29th, 1910.

1,887. J. C. HANSEN-ELLEHAMMER. Folding wings of flying machines.
13,005. R. SOMMER. Aeroplanes.
25,469. A. ROENNE. Docks for airships.

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